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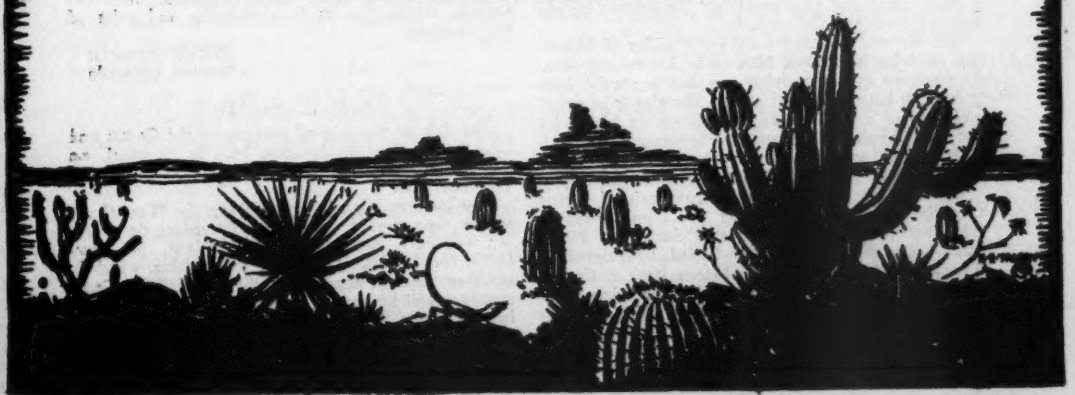
CACTUS AND SUCCULENT JOURNAL

VOL. XXXII JULY-AUGUST NO. 4

Fig. 48. *Ananas comosus*—a practical succulent grown in New Zealand by Marjorie Shields



CACTUS AND SUCCULENT JOURNAL

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SOCIEDAD MEXICANA DE CACTOLOGIA, A.C.

The April meeting was held at the home of Director Dr. Jorge Meyran at 2a. Juarez 14 in a suburban community comprising the old town of San Alverado. We attended the meeting as the guests of Mr. and Mrs. Dudley B. Gold.

Upon arrival guests were served a cooling drink, passed by the polite Meyran children. At a rather late hour for Nortamericanos, but seemingly right for "manana land" (about 10 o'clock) the meeting was called to order by President Dr. Helia Bravo (author of the classic "Cacti of Mexico" and Director of the Department of Biology at the University of Mexico) using a tinkling bell instead of a gavel. Minutes of a previous meeting presented by Secretary Arturo Carrilo Gil were approved without comment.

Dr. Bravo read a chapter of a revision of her book, which is now out of print and copies of which are something of a collector's item.

Prof. Bernardo Equia-Lis presented a peper detailing an excursion into Chihuahua by Dale Morrical, of Las Cruces, N.M. Some rather pointed exceptions to Mr. Morrical's conclusions on Chihuahua cacti were voiced by several members.

Manuel T. Castella, vice president, gave a report on a trip into Oaxaca and described with enthusiasm a "very large and very beautiful" Beaucarnea he observed growing by the roadside.

Dr. Meyran projected some color slides of blooming cacti he had taken himself in his own garden. Dr. Meyran is an optician and has a special lens ground to his own specifications. The clarity of detail and intense color reproduction shown in his slides proved the value of his specially constructed lens.

A buffet supper of tasty regional food prepared and served by Mrs. Meyran concluded the meeting.

One of the best edited and best printed cactus magazines, not even excepting our own Cactus & Succulent Journal, is "Cactaceas y Suculentas Mexicanas," the official organ of La Sociedad Mexicana de Cactologia, A.C. In the Feb.-March issue a *Cephalocereus senilis* in flower in full color adorns the front cover, and practically every one of the magazine's 22 pages have a fine, clear-cut illustration of some species of Mexican cacti. Although it is, naturally, printed in Spanish, use of the right botanical nomenclature for cut-lines enables the Nortamericano reader to enjoy the illustrations. A brief summary of the magazine's content is given in English on the last two pages. The magazine may be obtained by becoming a member of La Sociedad. There are four issues each year. Foreign membership is $2.00 (U.S.) per year. Send check or money order to Dudley B. Bold, Aniceto Ortega 1055, Mexico 12, D.F.

Nortamericano cactophiles planning to attend the cactus convention in Mexico City next year might do well to "bone up" on their Spanish for cacti and other succulent plants nomenclature by obtaining a copy of a 12-page mimeographed glossary just completed by Sociedad Mexicana de Catalogia. Entitled "Nombres Cientificos y Sus Signifiacados" the pamphlet gives the Spanish equivalent for the Latin terminology.

Albispina, for instance, is "con espinas blancas;" asterias is "como estrella;" Aporocactus is "cacto impenetrable;" Dolichothele is "pezon largo;" Echinopsis is "parece erizo;" and so on down the alphabet to Zygocactus, which is "cacto de yunta."

Arturo Carrillo Gil, Secty., Sociedad Mexicana de Cactologia, A.C., Taine 329, Mexico 5, D.F. can furnish information as to availability and price of the pamphlet.

EDGAR SHERMAN
Denver, Colorado

ANNUAL MEETING

The date of the Annual meeting of the Cactus and Cucculent Society of America, Inc., is, as usual, on the second Sunday of September, which falls on the 11th this year.

Any member planning on visiting the West Coast at this time should contact the Recording Secretary, Mr. William Bently, 10608 Poinciana, Whittier, Calif., for the exact location of the meeting, which is awaiting the final approval of the Board. West Coast members will be notified as usual so will not have to inquire of the Secretary.

Fig. 49
Kalanchoe pumila Baker, approx. x 0.3

A Dwarf Kalanchoe

J. R. Brown

Plant perennial with simple stems to 15 cm. tall, erect-spreading, smooth or more or less scabrous, the entire plant with a white flour-like coating.

Leaves opposite, decussate, sessile, obovate, dentate in the upper part, tapering from broadest part to base, to 4 cm. long, to 2 cm. broad. The older leaves assume a purplish tinge as the white coating is easily washed or weathered off.

Peduncles 4-6 cm. long, flowers in a dense corymbose panicle 4-5 cm. in diam., pedicels 5 mm. long; calyx 5 mm. long, segments acute free almost to the base; corolla tube short (ca. 5 mm.), green, segments 10 mm. long, somewhat obovate and abruptly pointed, reddish-violet; filaments 5 mm. long; ovary 5 mm. long tipped by the very short pinkish styles.

Collected by Baron in Central Madagascar. Rev. R. Baron collected mostly in the elevated central provinces, and one would infer from the heavy coating of white powder that this plant inhabits very dry situations.

While looking at the flowers under artificial light it was noticed that the color of the petals was almost equally divided lengthwise into two shades, one half being much lighter than the other. The color of the flowers of this Kalanchoe is somewhat unusual, the closest approximation in the R.H.S.C.C. seems to be Fuchsine Pink 627/2.

Baker describes this Kalanchoe as an erect glabrous perennial with simple erect stems not more than 2-3 inches long, however the plant as we know it grows about twice this height in cultivation.

Attention was drawn to this plant in several ways. It was grown from a small cutting and has been grown outdoors and fully exposed to the weather of So. California and received very little attention, not knowing of its possibilities and hardly expecting it to survive the first winter. However it grew amazingly and when it started to flower a very charming surprise was the result. The first flowers appear in late January and flowering continues for three months, and during our long dry and hot summers it thrived on only the most casual watering and never was thoroughly watered until our winter rains arrived. It seems to be reasonably hardy as, while *Kalanchoe blossfeldiana* and some other Madagascan Kalanchoes were killed by freezing the buds of *Kalanchoe pumila* were unharmed. It stands cutting back well so that a more bushy plant

Fig. 50
Kalanchoe pumila flowers nat. size

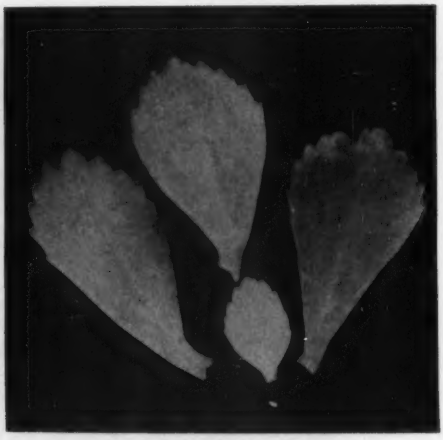


Fig. 51
Kalanchoe pumila leaves nat. size

is formed, this should be done as soon as the flowering period is over. It thrives in any ordinary succulent plant soil and so far shows no evidence of disease or pests.

It probably (judging by its vigor) could be grown into a much larger specimen than that shown in the illustration, and it would appear that if this plant were grown under glass and not watered overhead it might be very beautiful when in flower. Plants grown in the shade did not flower as freely and the growth was somewhate straggly and so a very sunny exposure is indicated.

DESERT FLOWERS UNDER GLASS

The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand

By MARJORIE E. SHIELDS

CHAPTER 18
Sub Genus 2—TEPHROCACTUS

Only a small group compared with the other two, the Tephrocactus or Ashy Cactus—so named because the majority are of a dull glaucous or ashy green colour—are divided into four Series. The inclusion of some may surprise you. They all come from South America.

Series 1 contains seven plants, of which one is O. strobiliformis from Argentina and, living up to its name has the shape of a pine cone. The tubercules are small, not prominent, the glochids few. It triumphantly waves just one single white ribbon spine from its topmost pine cone. It grows erect and has many elongated, oval joints, grey green in colour.

In Series 2 we find O. floccosa. My plant is a rather poor specimen, glasshouse conditions are too hot for it to do well unless grafted. Unlike many Opuntias it is not a desert plant, but grows in high cold valleys and hills near the top of the Andes, from Central Peru to central Bolivia. In the distance it looks like patches of snow or a flock of sheep on the mountain side. So how could it be expected to thrive in this heat? The plant is covered with "soft hair, like floss silk", which gives the plant its name.

Series 3 contains plants we all know and some at least are in all collections. O. glomerata, O. papyracantha, O. diademata, O. platyacantha var. deflexispina and O. turpinii, four come from western Argentina and all have long paper spines, some more flexible than others. They have globular joints with brown glochids and no spines, except the paper or ribbon ones and are said to be just varieties of O. glomerata. After all there is a great similarity between some of them. O. glomerata has the whitest ribbons and the largest joints. The name "gathered together in a compact cluster" perfectly describes its manner of growth. O. papyracantha has smaller joints, smaller tubercules and light brown glochids. The name, meaning "white paper spines" is a misnomer as far as my plant is concerned, for these long spines,

pointing upwards are fawn with transverse brown stripes. A variety has smaller joints and almost black paper spines. O. diademata "is crowned" with fawn ribbons with darker markings. These are short and very few with a tendency to point downwards. Compared with O. glomerata these plants are a darker green, the tubercules smaller and the globose joints not as plump. Also there is usually one spine only to an areole, whereas O. glomerata always has a pair and is very much beribboned.

O. turpinii from Argentina and O. platyacantha var. deflexispina from Chili and Patagonia, are also rather similar, both having much stiffer and less flexible spines, sharply tipped, which look and feel more like spines than ribbons. O. turpinii has large round shiny green joints and parchment coloured, wide, flat spines with a deeper mid rib and an all over pinkish tinge. They narrow to a sharp point. There are always three, sometimes more spines to an areole, pointing in all directions, while in O. platyacantha var. deflexispina the broad, flat, cream spines are all "bent down", so it is quite true to its name. These spines are beautiful, shining like polished bone and marked with deeper coloured wavy transverse corrugations and little flecks of white. The large, plump, shiny green tubercules are more prominent than those of O. turpinii. This plant has had to struggle for its very existance, but it won through, is now growing well and *it has rewarded me with a flower!!* This is a great thrill as it was so unexpected. The yellow blossom shades to gold at the tip, while each petal ends with a little twist where the gold deepens in colour. Pale yellow stamens graduate down the throat leaving a clear passage for the thick cream style, which breaks into seven pale green stigma lobes, all standing erect like little fat fingers pointing upwards. When fully expanded the flower measures 3 inches across. The ovary or seed pod is decorated with many fine ribbons, quite soft, though needle sharp.

There are quite a number of plants in Series 4, seventeen to be exact. All look most desirable, but 4 only are represented here: O ovata, O. pentlandii, O. corrugata, and O. microsphaerica. That finished this Tephrocactus group. Flowers have been scarce in these two groups. But never mind, perhaps we will find more in the Platyopuntias. Subgenus 3.

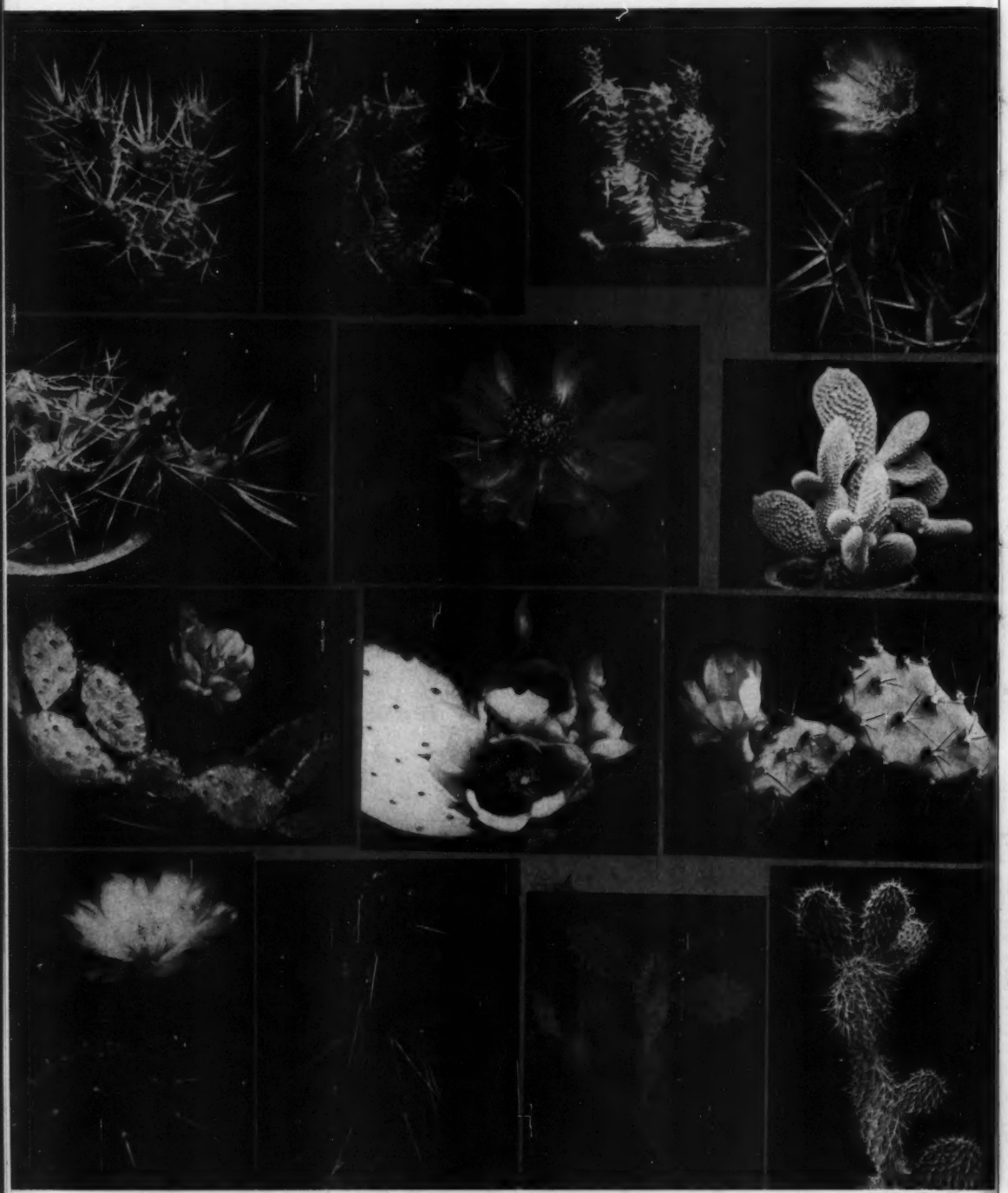
It is not the way of the Classification to jump from the small growing Tephrocactus group to the large pads of this Platyopuntia group. The change over is gradual and at first glance there is not much difference between these plants and those of the last group. But you will notice in these the little joints are flattened, some more so than others. The majority are found in North America, although some inhabit South America only.

Neither the first nor the second series is represented here as far as I know, but O. erectoclada looks as though it could belong to either. This little clustering Opuntia, a recent finding of Curt Backeberg, comes from Argentina. The well known O. aurantiaca of the third series is here, well out of reach as the joints are very fragile. This plant is typical of these first three series. See the short joints and how even though rounded or cylindrical they are also flattened? This is a wicked little plant but given full sun the joints colour and look like polished copper, the white wool in the areoles in sharp contrast. The name meaning "orange coloured" applies to the flowers, but I have not flowered it. This is another South American from Argentina and Uruguay.

In series 4, the joints flatten still further and begin to look like pads, and in Series 5, there is no doubt about it, for here amongst others we find O. basilaris, O. microdasys and O. rufida, all with quite large pads, and all from North America. O. basilaris has quite a distinctive shaped pad, top shaped, in that it is narrow at the bottom and broad and flat across the top. The name means "arising from the base". It is a beautiful green with highly coloured brown glochids in little raised tufts. It has not flowered yet, which is a pity, as I believe it is beautiful.

No need to point out O. microdasys familiar to us all. So are "the small close set hairs or bristles" (glochids) which give this one its name. There are many varieties—here is one with pale yellow glochids, and another with glochids almost orange. This one has round pads with areoles widely spaced, and here is one with very thick tufts of bristles. And the white ones O. albescens and O. albata, both with harmless glochids are little gems. Even though they all look so soft and velvety these two are the only ones it is advisable to stroke! The others are very deceptive for with the slightest touch hundreds of glochids will attach themselves to one most tenaciously. The flower is yellow—like a large pale buttercup with green stigma lobes. I have not flowered any of the varieties but presume they all have similar blossoms. Here too belongs O. rufida. This is often confused with O. microdasys. They both come from Mexico but O. rufida is not even a variety according to Britton & Rose. The blue-green pads have large bright reddish brown glochids and the large clear yellow flowers with greenish white filaments and five deep green stigma lobes make this a most decorative Opuntia.

Series 6 is not represented here, but in Series



Top row: Opuntia glomerata, O. papyracantha, O. diademata, O. platyacantha var. deflexispina. Second row: O. turpinii, O. rafinesquei, O. microdasys var. albata. Third row: O. macrarthra, O. microcentra, O. zebrina. Bottom row: O. vulgaris, O. quimilo, O. rhodantha, O. albispina.

7 we have O. rafinesquei. It is on the centre post where it has room to hang its drooping pads. I have been told the pads hang like this because its natural habitat is above snow line, so it droops its pads to prevent them being broken off by the weight of snow. Whether or not this is correct I do not know. Isn't the flower perfect? It opens quite flat, with very frilly yellow petals brushed with gold towards the centre. The thick cluster of stamens stands straight and yellow in a bunch around the cream stigma. A very lovely flower.

Here is an unnamed one also with a beautiful flower, which seems to fit into this series, as it is one of the low branching type with spoon shaped or dished pads, very wide apart areoles and no spines whatever. The large yellow flower is 4 inches across, each petal with a cinnamon base, making a colourful background for the yellow stamens and stigma lobes. The long, red, pear shaped fruits which follow the blossoming are decorative. It is a very suitable Opuntia for a small glasshouse for it responds well to pot culture, does not grow too large and never fails to put on a good display of flowers. Could it be O. macrarthra? The description seem to fit.

To find the next one we must skip right over to Series 11, to O. macrocentra and O. santarita. This exotic looking one is O. macrocentra with a wealth of flowers with large blood red centres. They are jostling each other for room along the edge of the pad and cannot open their blossoms to their full extent. These pads too are spineless, except for one solitary, long, dark brown one, on one pad only. Though the flowers are large, they are not as large, nor have they the beauty of the unnamed one, even though they are so spectacular with their bright red centres. The name "large centre" probably refers to these centres. Its natural habitat is among the sandhills of the Rio Grande. O. santarita from Arizona has been a big disappointment. It has beautiful pads bluish green with pinkish purple splotches. But it does not look happy and has made little growth, not has it shown us what a lovely flower it is capable of producing.

In Series 12 we find O. zebrina, with its natural habitat in Florida. Here, it lives high up on the ventilator rail! You can well understand why when you observe its long "zebra striped" spines. Its spreading habit of growth is rather awkward too for a bench plant. The pads are very thick through with wavy edges and are most artistically arranged. The plant is not really very large as Opuntias go, but because of the pad arrangement it takes up a lot of room. It is quite happy on its lofty perch and flowers profusely. Its many lovely blossoms, buds and last year's large purple seed pods add much to this plant's attractiveness.

We are coming now to the really large ones in Series 13. O. vulgaris grew too big for the glasshouse and is now outside on the path together with the others awaiting transport to an outside garden. But you see it has flowers. Small yellow blossoms with a reddish midrib on the backs of the petals, greenish filaments and white style. It has no great claim to beauty when compared with the others. Its very name means "common, ordinary". Its variety O. monacantha variegata is a much more handsome plant and has a real claim to beauty with its multicoloured pads. But it has to go as it has grown too large. I am sorry to part with it.

Series 14 has but one species, O. scheeri from Mexico, also out on the path. It is a pity they grow so large, for this one has a very unusual spine arrangement. The areoles are close together and the short hair-like spines, flat against the body form a honeycomb pattern. Beside it on the path is O. linguiformis from Texas. Definitely *not* a glasshouse plant. It has very long pads shaped "like a cow's tongue." It belongs to Series 15 together with O. aciculata, a recent addition to the collection. A very handsome plant also from Texas grows on high gravelly ground is usually restricted to dry hills. This gives us a clue as to how to treat this Opuntia, gravelly, sandy, poor soil, not too much water and plenty of sun. With this treatment it will produce roundish, blue-green pads, very large areoles filled with long chestnut red glochids, each cluster like a thick stubbly paint brush. "Furnished with needle-like spines and bristles" is the meaning of its name, and it certainly is. Let us hope this one will never grow too large for the glasshouse.

Series 17 is represented by O. tomentosa, another one relegated to the path. A tall erect plant with long pads seemingly covered with dull green suede, the areoles with yellow glochids. Series 18 contains but one plant "white haired" O. leucotricha from Mexico. Its long white bristles completely clothe it as the areoles are set so closely together. There are a few white spines entangled amongst the hairs. Always spectacular a well grown plant is really ornamental. As it eventually grows fairly tall, branching more or less from the top it gives height to the bench.

Series 19 is not represented, but in Series 20 we will find O. ficus-indica "the indian fig", so called because it was thought in the early days to have come from India, whereas it is a Tropical American plant. Much too large for a glasshouse it is awaiting removal with the others. (When these large Opuntias were finally planted in their new garden, outside, where

they belong, within six months they all burst into bloom much to the delight of their new owner.)

Here is one for Series 21, O. quimilo. This is the native name for this plant and has been adopted as its official name and is evidentally an adaptation of the name Quilino, where it was found, in northern Argentina. It is a striking looking plant as the long, narrow, thick pads are dark green and the spines, usually one only to an areole, are very long and white. Another which may belong to this Series came to me as O. albispina, but there appears to be no such name. Even so it suits the plant beautifully as it is covered with dense clusters of long pale cream spines which almost hide the bright green body altogether. These spines are fairly stiff and of uneven lengths and there may be as few as two in a cluster or so many it is difficult to count them. The areoles are prominent and close together, the glochids pale fawn.

Series 22 is not represented. O. robusta with its huge round pads is much too large and I was never tempted to own it. There are two plants to represent Series 23, O. erinacea "a hedgehog" from California and O. rhodantha from Colorado. The former has only recently been added to the collection. It has narrow pads covered with long white flexible hairs or bristles. Before long it will be one of the most admired. O. rhodantha is a perfect miniature of a large pad Opuntia. It is both dainty and artistic in its pad arrangement. Have you noticed that all the flowers we have seen and all the pads have been produced from around the edges of the pads? This one is different. It would appear that any of the areoles are capable of producing pads, not only those around the edge, for on this plant they come from the centre of the pad. It will be interesting to see when it flowers, if they too will come from areoles other than from those around the edge. This plant has not yet flowered, probably not mature enough. But I have seen it in bloom, decorative little red blossoms almost obliterating the plant.

Series 24, 25 and 26 are not represented and I am doubtful about 27, O. braziliensis, naturally from Brazil, which belongs here, as my plant does not look quite correct, the pads, though thin, not being leafy enough. They should look like small oval green leaves, thin and flat, usually with no spines and growing from a branched trunk. Mine has no trunk, it was grown from a pad. A trunk may develop later. All the same I am doubtful about it. A true plant is most attractive, like a little leafy tree—when grown in a pot, but it can grow into a real tree many feet high.

That brings us to the end as Series 28 and 29 are not in this collection. But here is a new one from Peru which is quite unique. This is O. johnsonii, discovered and named after Mr. Harry Johnson. The dull green pads are almost spineless but the queer thing about it is that when it flowers the blossoms will be produced at the tip of the pad, the ovary being hidden inside it. The red flower itself will appear only, like a little frill on the end of the pad. It will be most interesting watching the development of the hidden ovary. This blossoming will be a treat in store.

On the whole there have been a few more flowers amongst the Platyopuntias than we found amongst the Cylindrical which add to the mid summer display. Opuntias on the whole are not popular amongst collectors, but some at least are necessary in a collection to give it the "out of this world" atmosphere, and some, especially the Tephrocactus group, are real gems.

THE PINEAPPLE

(See cover page)

At the end of this raised portion of the centre bench, where it gets all available sun, we did not find an Opuntia, but a Bromeliad, Ananas comosus, in other words, a pineapple. This was grown from the top of a pineapple which is a miniature plant itself, and has taken four years to grow and fruit. During these years it has been the focal point of interest both for the family and visitors. We watched the squatty little leaves develop into 18 inch long slender ones, colouring beautifully during the winter months, when it was a joy. We repotted it into larger and still larger containers until it finally occupied a petrol tin. Excitement grew when a stem appeared complete with a knob on the end like a drum stick. This grew into a cone and at last little flowers appeared, like tiny three winged blue butterflies, which settled on it just for a day, one here another there, never more than three or four at a time. These little butterflies came and went for about a month. Then we could see the cone swelling visibly. This was in the autumn. Would it survive the winter frosts? It did. By spring it was a full grown pineapple deepening in colour daily. At last it was ready for cutting. We held our breaths. Would it be eatable? It was the most succulent pineapple we have ever tasted. Tree ripened and full of flavour. It must have been the long period of maturing that gave it that delicious flavour. The family voted in favour of disposing of the cactus collection and using the glasshouse for growing pineapples and were quite upset when their request was turned down. All the same everyone should grow at least one pineapple just for the experiment and the excitement. It is well worth it.

A REVISION OF BORZICACTUS

By MYRON KIMNACH

Part IV Continued from Vol. XXXII, No. 3

Loxanthocereus acanthurus: BORZICACTUS ACANTHURUS
Loxanthocereus aticensis: BORZICACTUS SEXTONIANUS
Loxanthocereus brevispinus: insufficiently known.
Loxanthocereus camanaensis: BORZICACTUS SEXTONIANUS
Loxanthocereus canetensis: BORZICACTUS ACANTHURUS
Loxanthocereus cantaensis: BORZICACTUS ACANTHURUS
Loxanthocereus clavispinus: insufficiently known.
Loxanthocereus erectispinus: insufficiently known.
Loxanthocereus erigens: insufficiently known.
Loxanthocereus eriotrichus: BORZICACTUS ACANTHURUS
Loxanthocereus eulalianus: insufficiently known.
Loxanthocereus faustianus: BORZICACTUS ACANTHURUS
Loxanthocereus ferrugineus: insufficiently known.
Loxanthocereus gracilis: BORZICACTUS SEXTONIANUS
Loxanthocereus gracilispinus: BORZICACTUS ACANTHURUS
Loxanthocereus granditessellatus: BORZICACTUS SULCIFER
Loxanthocereus hystrix: insufficiently known.
Loxanthocereus jajoianus: see *Borzicactus jajoianus* under insufficiently known species.
Loxanthocereus keller-badensis: BORZICACTUS ACANTHURUS
Loxanthocereus multifloccosus: insufficiently known.
Loxanthocereus nanus: BORZICACTUS SEXTONIANUS
Loxanthocereus pachycladus: insufficiently known.
Loxanthocereus peculiaris: insufficiently known.
Loxanthocereus piscoensis: see *Borzicactus piscoensis* under insufficiently known species.
Loxanthocereus pullatus: BORZICACTUS ACANTHURUS
Loxanthocereus riomajensis: insufficiently known.
Loxanthocereus sextonianus: BORZICACTUS SEXTONIANUS
Loxanthocereus splendens: see under insufficiently known species.
Loxanthocereus sulcifer: BORZICACTUS SULCIFER

Maritimocereus: BORZICACTUS

This genus was distinguished from *Loxanthocereus* because its single species had more tuberculate fruit, as well as stems with fewer ribs and spines, but these are trivial characters which are closely approached by those of allied species of *Loxanthocereus.*

Maritimocereus gracilis: BORZICACTUS SEXTONIANUS

Matucana: BORZICACTUS

Though *Matucana* was founded on the supposedly globose, densely thin-spined stems and hairless flowers of *M. haynei,* the stems of this species eventually become columnar, the flowers of some forms are often minutely hirsute and the spines are often fewer and coarser. *M. haynei* is also closely allied to *B. aurantiacus,* which has coarse spination and nearly hairless to thickly hirsute flowers, so that a generic line separating these species would be without function.

Matucana blancii: BORZICACTUS HAYNEI
Matucana breviflora: BORZICACTUS HAYNEI
Matucana cereoides: BORZICACTUS HAYNEI
Matucana comacephala: BORZICACTUS HAYNEI
Matucana currundayensis: BORZICACTUS AURANTIACUS
Matucana elongata: BORZICACTUS HAYNEI
Matucana haynei: BORZICACTUS HAYNEI
Matucana herzogiana: BORZICACTUS HAYNEI
Matucana hystrix: BORZICACTUS HAYNEI
Matucana multicolor: BORZICACTUS HAYNEI
Matucana ritteri: BORZICACTUS AURANTIACUS
Matucana variabilis: BORZICACTUS HAYNEI
Matucana weberbaueri: BORZICACTUS AURANTIACUS
Matucana yanganucensis: BORZICACTUS HAYNEI

Morawetzia: BORZICACTUS

The thickened, more densely spinose, floriferous stem-apices of *M. doelziana* are unique in the *Borzicactinae,* but I cannot recognize a stem-character alone as basis for a genus when its only species is a *Borzicactus* in every other respect. According to Backeberg the floral tube is terete in *Morawetzia* and flattened in *Oreocereus,* but I have repeatedly seen both conditions in both genera.

Morawetzia doelziana: BORZICACTUS DOELZIANUS

Oreocereus: BORZICACTUS

The presence of stem-hairs is the most distinctive character of this genus, but these also occur sparsely on stem-apices of some *Loxanthocereus* species and *B. fieldianus,* and nearly hairless forms of *O. hendriksenianus* and *O. doelzianus* have been collected by Ritter and by Rauh. Even Backeberg has seldom erected so weak a genus, and the long recognition of *Oreocereus* seems due to an uncritical respect for tradition.

Oreocereus celsianus: BORZICACTUS CELSIANUS
Oreocereus crassiniveus: BORZICACTUS TROLLII
Oreocereus doelzianus: BORZICACTUS DOELZIANUS
Oreocereus fossulatus: BORZICACTUS FOSSULATUS
Oreocereus hendrikseniānus: BORZICACTUS HENDRIKSENIANUS
Oreocereus maximus: BORZICACTUS CELSIANUS
Oreocereus neocelsianus: BORZICACTUS CELSIANUS
Oreocereus ritteri: BORZICACTUS HENDRIKSENIANUS
Oreocereus trollii: BORZICACTUS TROLLII
Oreocereus variicolor: insufficiently known.

Setícereus: BORZICACTUS

This genus has especially spinose floriferous areoles and a flattened receptacle, but the former character is hardly of generic significance and the latter also occurs in *Oreocereus* and in some forms of *B. aurantiacus.*

Setícereus chlorocarpus: see *Cactus chlorocarpus* under insufficiently known species.
Setícereus humboldtiii: BORZICACTUS ICOSAGONUS
Setícereus icosagonus: BORZICACTUS ICOSAGONUS
Setícereus oehmeanus: BORZICACTUS ICOSAGONUS

Setícereus roezlii: BORZICACTUS SEPIUM

Although *Cereus roezlii* is undoubtedly a synonym of *B. sepium* (which see), Backeberg has applied the name to another species (Fig. 4) referable to his genus *Setícereus.* Its stems are similar to those of some forms of *B. sepium,* but it is semi-arborescent, with bristly, floriferous stem-apices, the floral tube is flattened and only slightly hirsute, and a hair-ring is lacking. This species may actually be the poorly described *Cactus chlorocarpus* (see under insufficiently known species), but this must remain uncertain until a study is made of Humboldt's herbarium material in Europe. Until such a study has been made it seems best not to publish the species as new. Backeberg, and also Hutchison (#1596), collected it at Huancabamba, Peru. Johnson found a form at Abra Porculla differing in its more numerous ribs and spines, and thus partially resembling *B. humboldtii,* a variant of *B. icosagonus.* It is possible that *B. icosagonus* and this unnamed species hybridize or even intergrade, but at present they seem sufficiently distinct, the latter being distinguished by its much taller, erect, arborescent growth, 8 to 12 ribs, few radials, and less bristly floriferous stem-apices; there were no important differences in the flowers I examined.

Submatucana: BORZICACTUS

Established for the *B. aurantiacus* complex, which differs from *B. haynei* in its usually more hirsute flowers and less densely spined stems; this seems to represent an attempt to defend the generic virtue of *Matucana,* but this I consider a decidedly lost cause.

Submatucana aurantiaca: BORZICACTUS AURANTIACUS
Submatucana calvescens: BORZICACTUS AURANTIACUS

INSUFFICIENTLY KNOWN SPECIES

Borzicactus jajoianus Back., in Back. & Knuth, Kakt.-ABC: 411, 1935.
Loxanthocereus jajoianus Back., Fedde, Rep. sp. nov. 51: 64, 1942.

Its flower is still described only as orange, slightly zygomorphic and up to 6 cm. long. The type locality was given as "Urabamba", presumably Urubamba, Dept. Cuzco, Peru, but neither Johnson nor Hutchison have found it there; Backeberg[18] later said it grew at "Matucana on the road from Arequipa to Puno", although Matucana is nearly 500 miles north of that road. Recently Backeberg[19] has stated that the species is really from another locality of similar spelling, Uyupampa (ca. 20 km. n.w. of Arequipa), but by now it is difficult to take his data seriously. *B. jajoianus* can neither be recognized nor placed in synonymy until its distribution is known and until the flowers of the type plant, which is still cultivated in Europe, are better described.

Borzicactus piscoensis (Rauh & Back.) Rauh, Beitr. Kenntn. peruan. Kakt.: 291, 1958.
Loxanthocereus piscoensis Rauh & Back., in Back., Descr. Cact. Nov.: 16, 1956.

If this were a *Borzicactus* it would be an acceptable species, but it is not recorded whether its flowers are zygomorphic or diurnal and it may be a *Haageocereus.*

Cactus chlorocarpus HBK., Nov. Gen. Sp. 6: 67, 1823.
Cereus chlorocarpus DC., Prodr. 3: 466, 1828.
?Gymnanthocereus chlorocarpus Back., Blätt. Kakt. 1937-7: unpgd., 1937.
?Browningia chlorocarpa Marsh., Cact. Succ. Journ. Am. 17: 114, 1945.
?Setícereus chlorocarpus Back., in Rauh, Beitr. Kenntn. peruan. Kakt.: 326, 1958.

The description of *Cactus chlorocarpus* is so vague that the name cannot be applied with certainty to any presently known species, but Backeberg has apparently applied it to two species in turn, one, whose flower was drawn by Buxbaum[19], with hairless, nocturnal flowers and prominent bracteoles, is referable to *Gymnanthocereus* Back., a weak segregate of *Browningia,* the other, with orange-red flowers and hairy fruits, was later transferred by Backeberg to *Setícereus* because the stem-apices eventually produced extra bristles, although he has seen only dried, shriveled flowers. Obviously no species of *Setícereus* can be recognized on this basis. It is possible that the species currently misnamed *Setícereus roezlii* (which see) is *C. chlorocarpus,* for the descriptions do not seriously differ

18. Kakteenk. 1943: 37, 1943.
19. Blätt. Kakt. 1937-7: unpgd., 1937.

and both species are found near Huancabamba, Peru.

Cereus chotaensis (Web.) Vaup., Monat. Kakt. 23: 25, 1913.
Cleistocactus chotaensis Web., in Goss., Bull. Mens. Soc. Nice 44: 47, 1904.
Weber described this species from a single dried flower, all that remained of the original collection by André in 1876: ". . . flower 5 cm. long; limb 2½ cm. wide. Tube very hairy, covered with black hairs, 3½ cm. long. Limb hardly expanded; anthers visible between the ends of the petals." He also described the plant as 2 m. high and the flower-color as brick-orange. He published the species as a *Cleistocactus,* but in this genus he also included those cacti with an expanded, oblique limb. The type locality, Rio Chota, Peru, is within or near the range of the species usually misidentified as *Setiocereus roezlii,* but the identity of *C. chotaensis* can only be determined by an exploration of the type locality.

Echinocactus borchersii Böd., Kakteenk. 1933: 112, 1933.
?Oroya borchersii Back., in Rauh, Beitr. Kenntn. peruan. Kakt.: 487, 1958.
Though this species was described without flowers, the photo of the type plant shows a probable form of *Borzicactus haynei* with long yellow spines. Backeberg transferred the name to *Oroya,* applying it to a minor form of *Oroya peruviana;* both *Oroya* and *B. haynei* are known from nearby areas, but the correct generic disposition of *E. borchersii* must remain unknown until flowering plants from the exact type locality are examined.

Loxanthocereus brevispinus Rauh & Back., in Rauh, Beitr. Kenntn. peruan. Kakt.: 317, 1958.
The flower is unknown and the species is perhaps a *Haageocereus.*

Loxanthocereus clavispinus Rauh & Back., in Back., Descr. Cact. Nov.: 15, 1956.
Its flower is said to be "strongly curved" and red, but there is no other evidence of its belonging to the *Borzicactinae* and it may be referable to *Haageocereus.*

Loxanthocereus erectispinus Rauh & Back., in Back., Descr. Cact. Nov.: 15, 1956.
The flower is unknown but its stems are similar to those of *B. acanthurus,* which grows just to the south, and the two may be conspecific.

Loxanthocereus erigens Rauh & Back., in Back., Descr. Cact. Nov.: 16, 1956.
Perhaps this is another form of *B. acanthurus,* but its flowers are poorly known.

Loxanthocereus eulalianus Rauh & Back., in Back., Descr. Cact. Nov.: 14, 1956.
The flower is unknown and the species is perhaps referable to *B. acanthurus* or to *Haageocereus.*

Loxanthocereus ferrugineus Rauh & Back., in Back., Descr. Cact. Nov.: 15, 1956.
Its flowers are well-described but it is not recorded whether they are zygomorphic or diurnal.

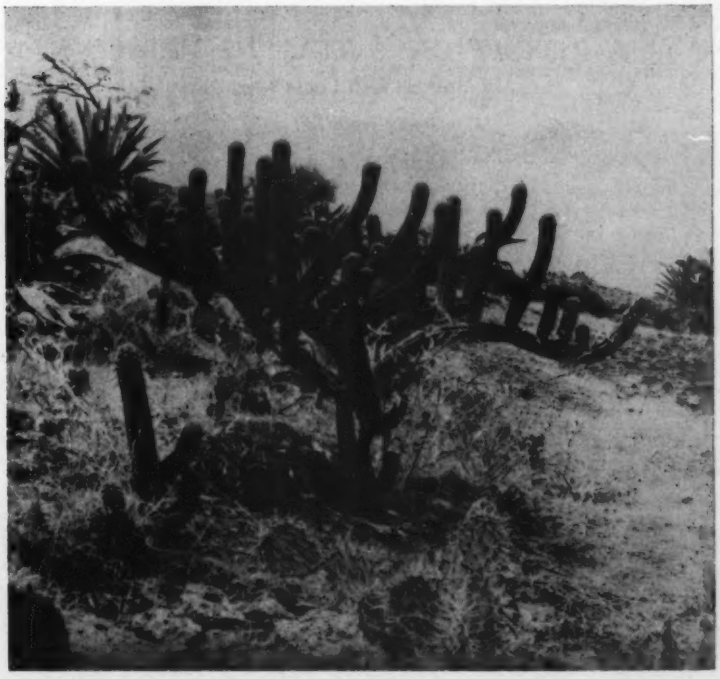


Fig. 4
Unnamed *Borzicactus* species misidentified by Backeberg as *Setiocereus roezlii* (which see). Hutchison 1596, Huancabamba, northern Peru. Photo by William H. Marshall, 1957.

Loxanthocereus hystrix Rauh & Back., in Back., Descr. Cact. Nov.: 15, 1956.
Loxanthocereus hystrix var. *brunnescens* Rauh, Beitr. Kenntn. peruan. Kakt.: 313, 1958.
The flowers are not known to be zygomorphic or diurnal, and the species may be a *Haageocereus*.

Loxanthocereus multifloccosus Rauh & Back., in Back., Descr. Cact. Nov.: 16, 1956.
Flowers not known to be zygomorphic or diurnal.

Loxanthocereus pachycladus Rauh & Back., in Back., Descr. Cact. Nov.: 16, 1956.
Flower unknown.

Loxanthocereus peculiaris Rauh & Back., in Back., Descr. Cact. Nov.: 16, 1956.
Haageocereus peculiaris Ritt., Back. "neuer" peruan. Kakt.: 14, 1958.
The flowers are not known to be diurnal or zygomorphic, and the species may be a *Haageocereus*.

Loxanthocereus riomajensis Rauh & Back., in Back., Descr. Cact. Nov.: 15, 1956.
Flower unknown.

Loxanthocereus splendens Back., Descr. Cact. Nov.: 14, 1956.
Akers never published his "Pseudoechinocereus splendens", which he intended to be the type of a new genus. Plants distributed under this name by Harry Johnson were grown from seed collected by Akers in his garden in Lima, Peru. Johnson informs me that both he and Akers later considered these seedlings to be hybrids; our specimen from the same source appears to have *B. sextonianus* as one parent, but, according to Johnson, the other parent does not seem to have been Akers' "Pseudoechinocereus splendens". As the plant on which Backeberg based his description came from Johnson and is a hybrid, the name can be retained only if modified as a cultivar name.

Oreocereus variicolor Back., Cact. Succ. Journ. Am. 23: 20, 1951.
Arequipa variicolor Back., Cactus 8: 37, 1953.
Backeberg first published this as an *Oreocereus,* but his description was worthless and the flower unknown. Later the species flowered in Europe and he transferred it to *Arequipa* because its flowers had a terete tube; however, I have often observed terete floral tubes in *O. fossulatus* and flattened ones in *A. leucotricha.* Although the fruit and seed of *O. variicolor* are still undescribed, its very tall, columnar stems with scanty hairs indicate that it is more likely an *Oreocereus* than an *Arequipa.* Ritter has collected several hairless forms of *Oreocereus* in northern Chile, and one with the manuscript name of "O. horridispinus" Backeberg[11] considers to be *A. variicolor.* Our plants of this, grown from Ritter's seed, seem allied to *O. hendrikseni anus* and the seed is typical of *Oreocereus* rather than *Arequipa.* However, *O. variicolor* is still too poorly described to determine in which of these genera it belongs or to allow its acceptance as a distinct species of *Borzicactus.*

A REPORT ON A TRIP TO MEXICO

By JOSEPH AND LUCIA KRES

Continued from last issue

We tried to get accommodations for the night in San Luis Potosi, but found that they were having a fair, and the hotels and motels were filled up. We had to keep going on to Queretaro, and on the way found Opuntia robusta, Echinocereus cinerascens, Coryphantha radians, and Mammillaria applanata. As we were nearing the city limits of Queretaro we saw in the distance, at the foothills of the mountains, what looked like some species of Lemaireocereus. These were shaped differently than anything we had seen so far. Since it was getting dark, however, we did not investigate, but went into town and obtained accommodations for the night.

It was with great regret that we found it necessary to go straight on in to Mexico City the next morning, rather than continue prowling in the fields. Nevertheless, it was a great pleasure to arrive there, and be greeted by our friends. A visit to the home of Dudley Gold, where we saw his collection, is one of our most pleasant memories. Dr. Bravo took us on a tour of the Cactus Garden, presently under construction, at the University of Mexico. Here, because of the location of the University on the Pedregal, the opportunities for magnificent landscaping are truly wonderful. Since this garden is really just getting under way, its possibilities are far from being fully realized. But in ten years this should really be a show-spot for aficionados and tourists alike. As a matter of fact, when you are attending the next Convention of the Cactus and Succulent Society, to be held in Mexico City in 1961, you will undoubtededly have a real treat when you visit this Garden.

Dudley Gold had proposed a field-trip in the Tehuacan region for the week-end, and so early on Saturday morning he, his wife and daughter, Dr. Bravo, and we took off. We arrived in Tehuacan shortly after noon, and after obtaining accommodations and eating dinner, we set out for a short trip along the road to Vera Cruz.

Here, our major finds were not cacti, but bromeliads and echeverias. The magnificent Tillandsia imperialis grows here in profusion, and by climbing precipitous cliffs, and fighting our way through dense foliage (for the rainfall in this area is heavy), we were able to reach trees where the species was growing, and to obtain a number of specimens. On these same cliffs there grew an

unidentified species of Echeveria, and we brought back with us several specimens of the plant.

But it was the next day of our trip which was the real treat. We left Tehuacan early in the morning, and took the back road to Oaxaca. To name all the species which we saw, and in some instances "found", would make this read like a catalog. We'll face that hazard, however, and submit the following list: Solisia pectinata, Ferrocactus robustus, F. nobilis, F. flavovirens, Agave stricta, A. horridus and varieties, Mammillaria sphacelata, M. carnea, M. viperina, M. compressa, Echinocactus ingens, Coryphantha pallida, Hechtias (not identified), Beaucarnea stricta, Metrocereus chrysomalus, Neobuxbaumia tetetzo, Cephalocereus hoppenstedtii, C. chrysacanthus, Myrtillocactus schenckii, Lemaireocereus hollinaus, and Wilcoxia viperina.

One of the things which interested us very much is the way in which nomenclature is undergoing rapid change. For instance, Metrocereus chrysomalus just a short while ago was in the genus Cephalocereus; Neobuxbaumia tetetzo was in the genus Pachycereus; but they have recently been removed from these genera by Backeberg, and his new classification has apparently been accepted. With reference to the Solisia pectinata, this small species is close to extinction. Insofar as both Dr. Bravo and Mr. Gold know, its habitat is presently confined to one hill.

We did much searching for a young Beaucarnea stricta. The hillsides are covered with ancient giant specimens, but young seedlings are scarcer than the proverbial hen's teeth. (We had a similar experience as we drove down the highway to Mexico City, when we looked for seedling, or young Echinocactus grandis and ingens.) We were finally successful, and were able to bring back with us a two-foot tall tree. (We had NOT had similar success with the Echinocactus.)

Where the giant cerei are concerned, we were fortunate in finding juveniles in several instances: Neobuxbaumia tetetzo and Cephalocereus hoppenstedtii, but for the most part had to take arms from mature specimens for rooting at home. But the most unusual thing we saw was Tillandsias growing on large Neobuxbaumia tetetzos in the dry blazing desert. These Tillandsias were the large vase type, and were all over twelve inches in height. We were so taken aback by this anomaly that we took numerous pictures of the phenomenon to bear out what we saw. We were able to dislodge a couple specimens of this bromeliad and bring them back home with us.

On the way back to Mexico City, that night, midway between Tehuacan and Puebla, we saw a single large specimen of Polaskia chichipi. The plant was not in too good condition, however, and of several cuts taken by Dudley Gold and ourselves, only one has survived. During the period of our stay in Mexico City we took a day's trip to the pyramids at Teotihuacan. Here, in addition to the archeological splendor, we found

Fig. 53
Left: Beaucarnea stricta on the back road out of Tehuacan to Oaxaca. Right: Myrtillocactus geometrizans on the highway south of Matehuala.

great mounds of Mammillaria magnimamma. Since this area is a National Monument, however, we could not take any. We considered ourselves fortunate when, on the way north, in a side trip which we took to Tecozautla, we found additional specimens of this species. We did not see any Echeveria gibbiflora in its native habitat in the Pedregal, but succeeded in obtaining a specimen to bring home with us.

When it was time for us to leave Mexico City and start home, we left early in the morning, and arrived at Ixmiquilpan in time for luncheon. We obtained accommodations there, and then took off on a side trip. This was also a very productive trip. And again we present a "catalog", tho this time most of the specimens were small, rather than giant plants: Echinocereus cinerascens, Coryphantha conifera, C. clava, Stenocactus pentacanthus, Thelocactus leucacanthus, Mammillaria magnimamma, M. compressa, M. uncinata, M. kewensis, Ferrocactus latispinus, Echinocactus ingens, Myrtillocactus geometrizans, Lemaireocereus dumortieri, Opuntia azurea, and Jatropha spatulata. Nightfall made us turn back to Ixmiquilpan.

We left early the next morning, and, high in the mountains as we were, made many stops—though the winding road with no pull-offs made our stops fewer than we would have liked. It was a short distance out of Ixmiquilpan—before reaching Zimapan—that we had an experience we will both remember for a long time. We were fortunate in having a pull-off at a spot where we saw a very beautiful but unknown, to us, specimen of Agave. The cliff on which they were growing was precipitous, and unlike the rocky cliffs to which we were accustomed, was red clay. Further, because of the heavy fogs which prevail in this area, the clay was sodden. And, as you might expect, the plants were growing far out of reach, high on the cliff. The footing was extremely precarious, and it became apparent that the only way in which the cliff could be negotiated was to use our trench pick as an alpine-stock. Joe was selected to make the climb, and made his start. With each step more clay adhered to his feet, and shortly his two feet were nothing more than enormous globs of clay. This obviously made his advance still more perilous, but he nevertheless made his way successfully quite high to where it was possible for him to loosen two plants not too large for him to handle (although this is not one of the giant Agaves). Having placed the two plants in the large piece of burlap he had taken with him, and having fastened them to his belt, he thought he was ready to start his descent. But just then he found a very lovely Mammillaria, such as we had never seen before, growing very securely in a solid rock facing. He tried to loosen it, but was unsuccessful.

Lucia, in the meantime, had scouted the immediate area, and had found two things: another specimen of the Mammillaria which Joe found far up, and what appeared to be a somewhat easier path of descent. The Mammillaria, while relatively low on the cliff, was nevertheless just out of reach, being perhaps seven or eight feet up. Joe became aware that he was going to have a slightly more-than-difficult time descending. It was necessary for Lucia to guide him down: coming down backwards, using the pick to help him keep his footing, Lucia told him to move a step or two to his left, or right, down a step, then right or left again, as the case might be. He finally made it, and without any accident, but with a great sigh of relief. Before he had a chance really to catch his breath, Lucia pointed out the Mammillaria she had found. By carrying some largish rocks, and building a sort of cairn, Joe was able to mount this pile, and with Lucia holding him to maintain his balance, was able to reach and extricate this lovely plant. We have not, to date, been able to identify either the Agave or the Mammillaria.

It was a real job scraping Joe's boots clean enough for him to be able to walk with ease, and to drive, but it was accomplished finally, and we set off again. We lunched in Jacala, but did not loiter there, continuing on to Tamazunchale. Now, as you probably know, the descent into Tamabunchale brings you into totally different terrain. It approximates jungle. And in the area just north of Tamazunchale we came upon a profusion of rain forest epiphytes: Hylocereus, Commelina, Rhipsalis, Philodendron, Bromeliads. Our disappointment was great that we were unable to secure any of these—the trees on which they grew not only were quite high, but the trunks were tall and straight before starting to branch. While we were able to negotiate all kinds of hills and cliffs, we realized we had neither the equipment nor the experience for ascending into these tall trees to obtain the plants in which we were interested.

We continued on into Valles, where we spent the night. It was just a short distance out of Valles in the morning, before arriving at Mante, that we came upon several stands of Lemaireocereus pruinosus and Cephalocereus palmeri. The plants were all in excellent condition, and while we had at home a nice piece of C. palmeri, we were able to obtain another large arm for rooting. Of L. pruinosus we had plenty, so did not touch these plants.

It was along much of the way from Valles into Monterrey that we passed enormous farms of Agaves. Planted in rows, they stretched for

miles along both sides of the highway, as far back as we could see. This was raised for fibre, and we believe that it was Agave sisalana. It was on the other side of the Sierra Madre Oriente range, as we were going south, that we had seen the same sort of farm—miles of neat rows of Agave. The Agave farms, however, were for the production of pulque and tequila, and we do not know what species is used for this purpose.

With reference to the sisalana, it might be interesting to know that more uses for the fibre obtained are being found constantly. The fabric which is woven from this fibre is tremendously strong and long-lasting. It was over several years ago that we had bought in Monterrey a table-cloth made of agave fibre (although in the mercado they call it "cactus cloth"). This table-cloth has had unremitting use, and is laundered by a commercial laundry, yet today still shows not the slightest sign of wear. And as we travelled through Mexico on this trip we found in several places that the bed-spreads and dresser-scarves were made of the same fabric. We find it most attractive, and its long-life certainly makes it economical.

Ever since we had come into Tamazunchale, the travelling had been hot. We had, up to this time, had only the most beautiful weather. We had been told that we were coming in the rainy season, and to be prepared for it. Nevertheless, we had so little rain as to make mention of it unnecessary. And because of the altitude of the Central Plateau, the Valley of Mexico, and the mountains through which we travelled north, the temperature was ideal. But now we were so close to being at sea-level, it was late August, and we were close to the tropics so that the temperature and humidity were both high. It was in Valles, as a matter of fact, that we spent our first night in an air-conditioned room—and it was necessary, too!

Because we were so close to being home; because our vacation period was nearly ended; because the cactus-hunting was not nearly so productive; and because the weather was so uncomfortable, we made no further efforts at collecting. Instead, we took our time getting into Monterrey, where we secured accommodations, and enjoyed ourselves in the swimming pool of the motel.

We arrived at Laredo the next day around noon, and learned that we would be able to have the plants go through the fumigator immediately. We therefore decided to wait for this to be accomplished. We found all the officials to be completely cooperative, and none of our plants was rejected. All came through the fumigating process with flying colors. The loss of two or three specimens which we experienced we attribute to their initial poor condition rather than to the effects of the fumigating.

We arrived home in San Antonio that night around 9:00 p.m. very tired, very satisfied, and very happy. And with one thought dominating our minds: that we must return again—and yet again!

Notes by Early Spanish Botanists in Peru

HARRY JOHNSON

Recently I have read abstracts from the journal of Sr. don Hipolito Ruiz of his botanical explorations in Peru and Chile during the years 1777-1787. The journals were not published until 1931 when R. P. A. J. Barriero, P.S.A., edited them in Madrid having received them from a descendant of Sr. Ruiz. An American translation was published by the Field Museum of Natural History, Volume 21, Botanical Series, 1940.

While quite dry reading (an unembellished account of plants collected and difficulties of travel) it was of extreme interest to me as most of the ground he covered I had visited on former trips to Peru.

Two Spanish botanists, don Hipolito Ruiz the leader and don Joseph Pavon and two delineators, Josef Brunette and Isidro Galvez, together with a French botanist, Joseph Dombey, received commissions from the King of Spain for a four year period which was later increased to ten years. They left Cadiz on October 19th, 1777 and arrived at Callao, Peru April 8th, 1778 via Cape Horn almost six months later without having seen another vessel until just before reaching Callao.

The difficulties of travel in Peru at this early date were considerable but being commissioned by the King they got preferential treatment and were able to collect as far north as Cuchero on the Rio Huallaga and almost to Huancayo in the south and along the coast north to Huaura. Food and lodging were a great problem, as in many places they still are. Knowing the country as it is today, the diligence and persistence of these men who collected there 180 years ago and brought back thousands of specimens and drawings is phenomenal. Only dedicated men could have taken the discomforts, poor food, sickness and isolation for so

long. Their first shipment to Spain was lost as the English captured the vessel. Another time a fire burned all their collections, books, and equipment. Heart breaking disappointments for years of work.

All but one returned, don Josef Brunette, having died at Pasco probably from a heart attack as Pasco is 15,000 elevation.

Perhaps the greatest disappointment was that after all the work, which continued on in Spain for some thirty years, and the 20 million pesetas spent by the Spanish government on their journeys, only the third volume of the Species Plantarum of Ruiz and Pavon was published within a century according to Sr. Barriero.

I was searching for references to cacti but found few. Little was known at this time about the family and most if not all were assigned to the genus *Cactus*. On page 40 he refers to "several species of cactus" as being found near Matucana. The genera found in the valley of the Rio Rimac near Matucana are as we know now: *Haageocereus, Mila, Matucana, Neoraimondia, Tephrocactus, Opuntia, Melocactus, Loxanthocereus, Armatocereus, Trichocereus.* Also mentioned are two Euphorbias, but not succulent ones. On page 220 at Chulguillo, 3 leagues from Huanuco, he mentions an abundance of cactus on the hillsides. Near here I found *Espostoa, Trichocereus, Erdisia* and *Echeveria peruviana* with beautiful varnished flowers. On page 167 he describes a journey from Lima to Huanuco starting on the 12th of May, 1784 going by way of Canta Valley. They spent the night of the 15th at the village of Yaso where he states: "I described five species of cactus; squamatus, lanatus, erinaceus, echinatus, and cancelatus." There is no knowing what plants he described without having his original notes which so far probably have not been published. Probably his cactus lanatus was our present *Pseudoespostoa melanostele* and *Cactus echinatus* could well be *Melocactus townsendianus*—both of which are found near by.

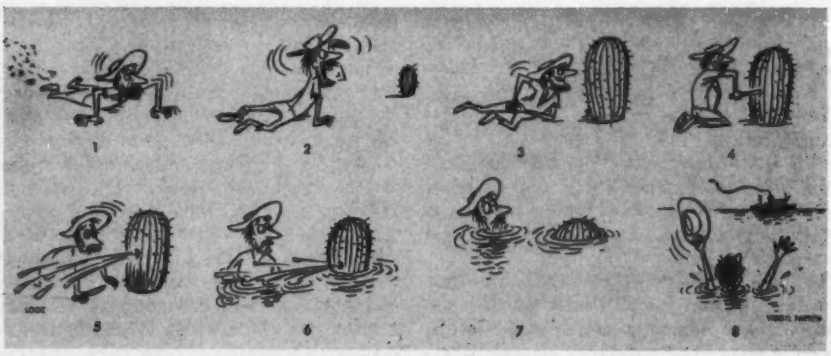
On page 178 he mentions *Cactus parasiticus.* He was at Puzuzo on the Rio Pozuzo about 80 kilometers directly east of Huanuco in a hot, wet valley. He probably refers to *Rhipsalis cassutha* or the red fruited variety I have called *Rhipsalis quellebambensis.* Another possibility is *Mediocactus megalanthus.* All of these plants are fairly widely distributed along the eastern side of the Andes in this general region. I found them on the Rio Huallaga not too far away.

The only other notes interesting to cactus and succulent fans were two references to *Stapelia.* Page 203, *Stapelia volubilis* near Pozuzo, page 230, *Stapelia hirta* on the Rio Huallaga at Cachahuasi. Obviously he was not referring to the genus *Stapelia* that we know. He was using the old Linnaean system of classification which sometimes brought together queer bedfellows. Only his notes and drawings could possibly clear up the plants' identities unless described in one of his published works. The genus Stapelia was published by Linnaeus in 1737. It was cited as the first example of the necessity of establishing new genera to dispel confusion in cases where earlier botanists had put a plant or group in more than one genus. Apparently Sr. Ruiz was a little foggy on the definition of the genus.

NEW ORLEANS SOCIETY

The New Orleans Cactus and Succulent Study Club has a membership of 17 ladies. We meet once a month at various members' homes where we can see collections. Over a period of a year, a fund is built up which is used to purchase new plants which are evenly distributed among the members. Members take turns to study about a certain plant and then give a talk on the subject. We also conduct a question and answer session.

Mrs. John M. Dunn
806 Marguerite Rd.
Metairie, La.



Water to Burn From "Look"

Fig. 54. *Echeveria elegans*

POTS, PLANTS AND PATIOS

Many of our finest flowering and decorative succulent plants come from the neighboring country of Mexico and some of the best are plants known as Echeverias. Most of them with rosettes of leaves, some large, some small; many are plants with numerous stems, others are stemless or with short stems. The leaves may be smooth or hairy, sometimes velvety in texture, and the colors vary from pale grey-greens to brilliant greens often with metallic tones; this great variation of leaf color and size is one of their endearing characters and so we have in the Echeverias some of our most attractive potted plants. Some of them do well in full sun others look best in partial shade and most of them have attractive flowers and in some cases are very colorful indeed.

Echeveria elegans Rose is one of the most popular and is very well known in our gardens and whether used as a group planting in the garden or as a potted specimen it is equally effective and it well deserves the name "elegans." It has no special soil requirements as it seems to grow well in any ordinary and reasonably porous garden soil. The color of the leaves of the small rosettes is a pale glaucous green with translucent margins and the plant always has a clean, fresh appearance. It branches freely and soon forms clusters and when in flower the dainty pinkish flower stems bearing pink flowers tipped with yellow are quite attractive.

When the plant does become overgrown in the pot, generally all that is necessary to renew it is to break it apart and replant some of the rosettes, as they usually have formed short aerial roots just below the old rosettes and thus are easily rerooted. It is better to have a pot or two of younger plants growing along to replace the older specimens as they deteriorate. The plants shown in the photograph are in 25 cm. pots (ca. 10 ins. in diameter).

PABLO

CULTIVATED AND NATIVE AGAVES IN THE SOUTHWESTERN UNITED STATES

AUGUST J. BREITUNG
1416 S. Glendale Ave., Glendale, California

PART 9

Agave schidigera Lemaire, Ill. Hort. 9: pl. 330, 1860.
A. filifera var. *adornata* Scheidw. Wochenschr. Ver. Beford. Gartenb. 4: 287, 1861.
A. vestita S. Watson, Proc. Amer. Acad. 25: 163, 1890.

Distribution: Mexico; Michoacan (type cultivated from vicinity of Volcán Jorullo), Zacatecas, Mexico and Jalisco (the type of *A. vestita* with more prismatic threads, from near Guadalajara).

Rosette single, 7 dm., leaves numerous, uniformly spreading, green or purplish, 20 to 30 cm. long, 1.5 to 2 cm. wide; spine 7 to 10 mm. long, brown; margin entire with rather numerous coarse and coiled, long, white marginal threads 2 mm. wide; scape 2 m. high with triangular bracts 15 cm. long and 15 mm. broad, inflorescence dense; perianth 50 to 55 mm. long, green, reddish tipped; capsule 25 mm. long.—August.

Agave angustissima Engelmann, Trans. Acad. St. Louis 3: 306, 1875.

Distribution: Mexico; Tepic (the type from "Ocotillo, direction of Tepic"), Nayarit to Sinaloa and Sonora.

Rosette usually single 7 to 9 dm. in diameter; leaves numerous, uniformly spreading or falcate, 40 to 60 cm. long, 2.5 cm. broad at the base, gradually acuminate, 1.5 cm. broad at middle, green with few glaucous markings, margin entire with slender, loosely coiled white marginal threads 4 to 10 cm. long; spine flattened, brown, 5 mm. long; inflorescence (according to Berger, l.c. 70) 2 to 4 m. high; flowers in pairs, yellow; capsules beaked, 18 to 20 mm. long.

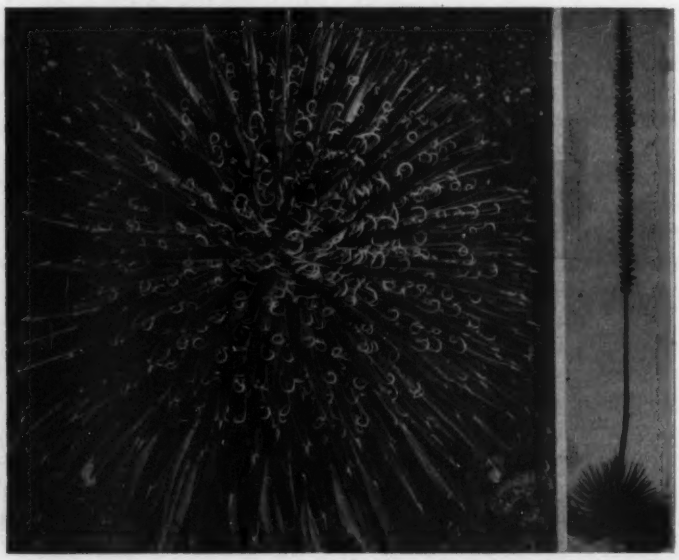


Fig. 55
Agave schidigera. Left. rosette grown by Lucie Wagner, Hollywood, California, approx. ¼ natural size. Right: grown by Judy Buttner, Fallbrook, California.

Fig. 56
Agave angustissima. Grown by H. S. Gentry, Murrieta, California.
Introduced from Sierra Charuco, Sonora.

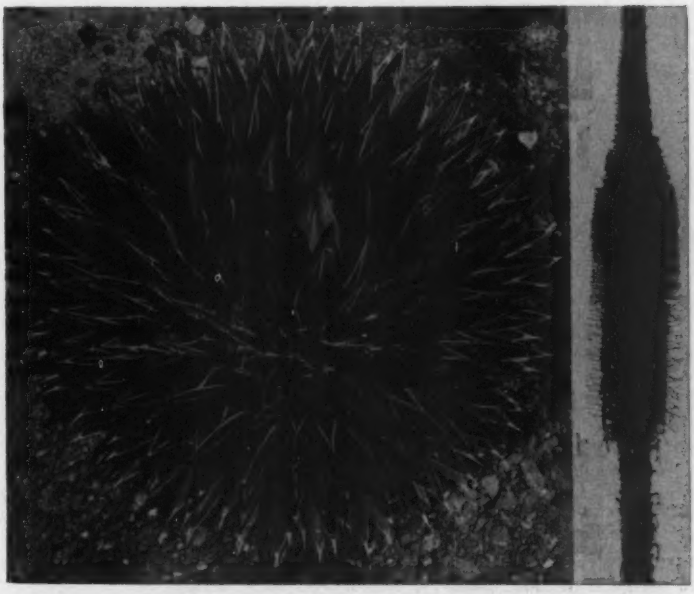


Fig. 57
Agave filifera. Rosette grown by Lucie Wagner, Hollywood, California, approx. 1/6 natural size.
Right: inflorescence in the Huntington Botanical Garden, San Marino, California, reduced approx. x4.

Fig. 58
Left: *Agave filifera* var. *compacta*. Grown by Frank Crosby, Malibu, California, slightly reduced.

Agave filifera Salm-Dyck, Hort. Dyck. 309, 1834.

Distribution: Mexico; Hidalgo and San Luis Potosi; type cultivated in Europe without citation of locality.

Rosette stoloniferous, 65 cm. in diameter, 50 cm. high; leaves numerous 20 to 25 cm. long, 2 to 3 cm. broad, dark green with white markings and numerous slender recurved white marginal threads or the latter sometimes absent; spine 10 mm. long, openly grooved, brown; inflorescence 2.5 m. high stout; perianth green, purplish-tinged, stamens long exserted, purple.—June.

***Agave filifera** var. **compacta** J. Verschaffelt, Cat. 9: 41, 1865-7.
A. perplexans Trelease in Bailey, Stand. Cylop. Hort. 1: 238, 1914.

Distinguished by the small rosette with short broad leaves scarcely 10 cm. long.

Agave geminiflora Kerr-Gawler, Journ. Science 2: 88, 1817.
A. geminiflora filamentosa Hooker in Curtis' Bot. Mag. 82, under plate 4950, 1856.

Distribution: Mexico, type cultivated in Europe without citation of locality.

Rosette single, or, according to Berger, l.c. 69, in age mound-forming, 4 to 7 dm. in diameter; leaves numerous, dark green, soft and pliable, narrowly linear, 60 to 90 cm. long, 3 to 6 mm. wide, biconvex, margin with slender white threads, spine flattened 4 to 5 mm. long; flowers unknown to writer.

Agave geminiflora var. **atricha** Trelease in Bailey, Stand. Cylop, Hort. 1: 238, 1914.
A. knightiana Drummond in Curtis' Bot. Mag. 4(5): under pl. 8271, 1909.

Distinguished from the typical species by the stiffer, shorter leaves, 3 to 3.5 dm. long, devoid of marginal threads.

*In the trade sometimes erroneously called *Agave pumila*.

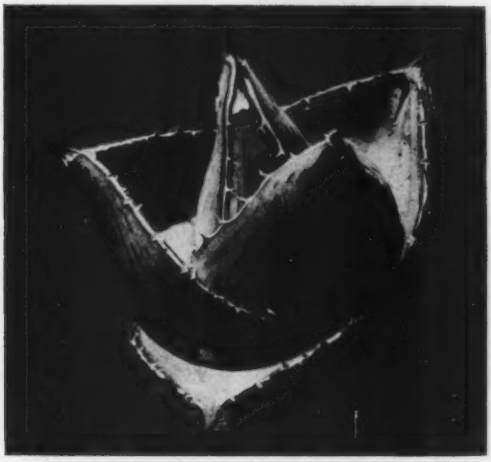


Fig. 59
*Agave pumila** in a private garden in southern California; slightly reduced.

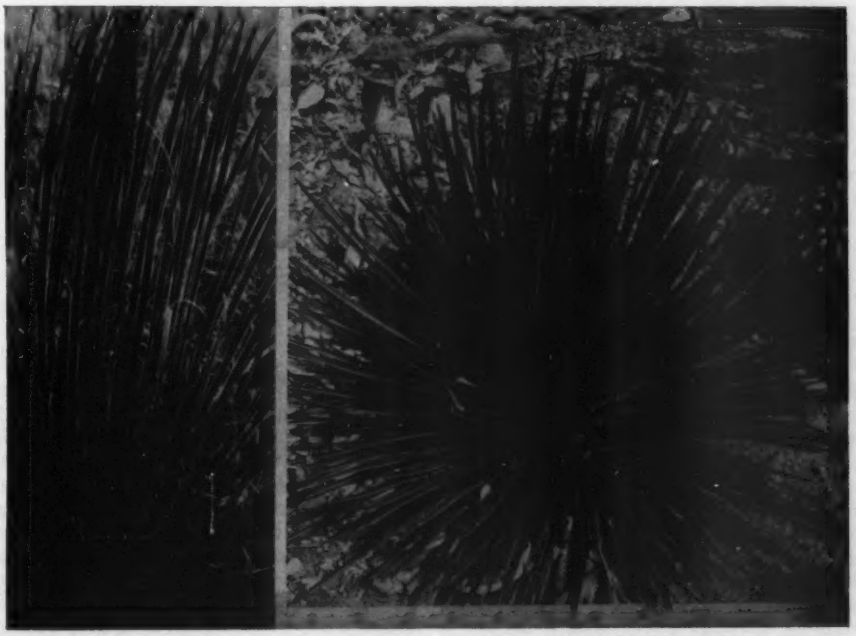


Fig. 60
Left: *Agave geminiflora.* Grown by H. S. Gentry, Murrieta, California, approx. ⅓ natural size.
Right: *A. geminiflora* var. *atricha.* Grown by Hayes Schlundt,
Pasadena, California, approx. 1/4 natural size.

*for description of *Agave pumila* see Cactus & Succ. Journ. 31(3): 91, 1959.

QUESTIONS and ANSWERS

Conducted by HARRY JOHNSON Paramount, Calif.

Question: Every spring my *Echeveria agavoides* goes wrong. The leaves starting at the base and working up one by one get yellowish, transparent and shrivel. In despair each spring I cut off the roots completely and tear off most of the bottom leaves and replant. What do I do wrong? Do I overwater it?

MADAME RELAND REMILLARD
Quebec, Canada

Answer: As you suggest the long winters are partly the trouble. Lack of sufficient sunlight and the dry heated rooms where it is kept are probably the main cause. However a different potting mix may help. Friends in Canada have been having fine success by potting *firmly* in the dried moss (Sphagnum) from bogs. They collect the green moss and dry it. It allows plenty of air circulation about the roots and both cacti and succulents seem to like it. It does not stay soggy too long.

Question: I planted Notocactus seed and now have about 50 seedlings. After 6 weeks their growth seemed to stop. If anything they seem to have shrunk some. I have been giving them considerable light but not direct sunlight and they have bronzed and reddened quite a bit. I water from the bottom every other day.

THURMAN RIDGWAY, Indiana

Answer: Cactus seedlings come up quickly and using the food stored in the seed swell rapidly, the two tiny seed leaves standing at the tip. From here on the tiny plantlet must manufacture its own food so first it must develop a root system which takes some time. Then the tiny plumule at the tip begins to grow and shortly the tiny spines begin to emerge. A magnifying glass will show clearly what is happening. The growth is slow for the plantlets are tiny. Such varieties as *Notocactus leninghausii, N. haselbergii* etc., grow in size very slowly as the seeds are tiny. *N. pampeanus* and those near it grow faster as the seeds are larger. It takes about 6 months for the small seeded species to get large enough to handle and 3 months for the large seeded species. It takes 2 to 3 years to reach one to two inches in diameter under average conditions.

Question: What kind of fertilizer other than your Cactus Food would you recommend for a soil high in potassium and being subjected to a very hard water, which would make normal growth. New growth on my *Trichocereus lamprochlorus* is extremely light in color. Would acidified water given to this plant be a suitable remedy? WARNER DODD, Arizona

Answer: I would suggest using a top dressing or mulch of cow manure about one inch thick over your cactus bed. The mulch keeps the surface much cooler and prevent the feeding roots from being killed by insolation. The mulch may be renewed annually or even oftener if necessary. The yellowness of the Trichocereus may be due to too strong sunlight or it may be caused by iron deficiency in the soil or compost. Our Soil Conditioner will correct it, also iron chelate, if due to iron deficiency. To a degree you can partly correct the deleterious effects of hard water. Top dressings of agricultural sulphur, the use of cotton seed meal fertilizer and mulching will all help. Leaching by allowing sprinklers to run for hours may also be of help.

Question: About 4 years ago I bought an Empress cactus. It is in a sunny window and I feed it plant food every two weeks. Now it is all drying up. Why is this?

MRS. JOHN RADIN, N. J.

Answer: It is drying up because the roots are dead. Every two weeks is far too often to fertilize unless the fertilizer is extremely dilute. The plant likes an open porous soil. Generally two or three times a year is often enough to apply fertilizer when growing them inside. Growing them out of doors in strong light as in California more fertilizer can be used. However caution is always to be observed.

Question: I am thinking of making an outdoors cactus garden along the south side of my house in full sun. I want plants from 6 feet tall on down. We are in central Oklahoma. Can you advise me what to plant?

MRS. EARL W. WRIGHT, Okla.

Answer: Very few cacti hardy enough to stand your winters ever grow to 6 feet tall. The selection of species suitable for your conditions would be generally limited to those native to Oklahoma and nearby states. I doubt if any of the South American species would prove winter hardy and very few Mexican species. However there are quite a few Opuntias, Coryphanthas, Neobesseyas, Pediocactus simpsonii, Echinocereus and possibly Echinocactus horizonthalonius, Hamatocactus, Ariocarpus fissuratus, Thelocactus bicolor etc., that might be tried. Only trial can assure you of those suitable for your location. Hardiness is bound up with many contributing factors for even hardy plants can be frost-bitten under certain conditions, as with sudden temperature drops.

Blossfeldia liliputana—The Tiniest Cactus

H. FECHSER

This tiny little cactus has very soft fleshy roots that begin to form on the small seedlings. Any part of the fleshy roots that lays where it is exposed to light will produce new heads. New heads develop under the epidermis till they reach such a size as to break through. In the case of Blossfeldias, frequently one sees new heads forming under the surface of an already well developed head. Sometimes it is possible to see how these new heads are forming and taking size and form before the epidermis bursts, letting them go through. Before there is any visible sign of the still hidden and new forming heads, the epidermis becomes very even due to the pressure. Under the epidermis of a well developed head, several new ones can form at the same time around the old one. Much more frequent is the growth of new heads from below on the sides of the old one. If one puts a plant on the surface of the soil so that part of its fleshy roots comes to lay horizontally, new heads will appear all along the visible part of it. Dichotomic division of heads is quite common with Blossfeldias. Plants of about ⅓ of an inch do flower. A well opened flower completely covers the body of a plant of this size. The buds begin to form long before flowering time. First there appears a tiny woolly spot near to the growing center, possibly on last year's areoles. I have seen these little woolly spots in early autumn; they continue their growth slowly during winter time and the flowers open even on bright sunny winter days (spring-like damp winter days) but mostly in early spring. These tiny flowers are a pale yellow and open almost flat if the air is warm and somewhat damp. Isolated flowers appear over a long time during the year. Plenty of light is needed to have a well opened flower. If the weather is dull and cool the flowers don't open. Seed pods form anyway due to the cleistogamic character of this species.

The proper care for this little plant can be very simple. Blossfeldias seem able to absorb moisture through the epidermis, possibly through the areoles. If plants are sprayed, one can see how the epidermis spreads moisture quickly over its surface and also how the moisture remains quite a time. If one looks attentively at the little heads before and after spraying it is possible to see that they show differences a short time after they have been moistened only superficially.

In their natural growing places Blossfeldias dehydrate so much during the dry time that often young plants become as thin as a sheet of airmail paper. In older plants the only living remains look like a very thin skin and if one takes a piece of rock where such a plant is found, it looks almost like a picture on the stone's surface.

Blossfeldias should not be potted if they are not in a reasonably plumped up condition. If they are plumped up enough when they are repotted they can be left dry at an airy and shady place for some time (the sort of shade that lath houses produce is good), several weeks or months without any visible damage. When the weather is fine and the Blossfeldias are in a quite dry soil they can be sprinkled superficially without fear. If they are in healthy condition they will react quickly. After the first spray on newly collected or repotted plants it is good to expose them immediately to direct sun for a while to make any moisture quickly disappear.. After that they will look refreshed. Once they are dry they should be placed again in a shady place where they are not exposed to cold drafts. Lucky greenhouse owners can place them under the bench where they will receive the kind of diffused or reflected sun they like. Once the Blossfeldias have remained for a time on the same place without suffering any damage it is good to sprinkle occasionally when the weather is fine (during cold season) and when it is cloudy and damp (during growing season). Now it will no longer be necessary to expose them to direct sun. Only in summer when it is very hot and when the moisture disappears very quickly the plants can be watered so that the soil will keep moist for some days. Once the soil is again almost dry the plants can be sprayed several times. Between several spraying periods (of four or five days) weeks of dry periods can be left alternately. One should take advantage of the weather, spraying when the plants could have received a shower in the open. Rainy periods at the right moment should be used to spray generously. Once the soil is dry again and after having left it so for some time the plants should be sprayed again superficially every now and then—including the soil surface. Cool nights and warm days are very good for the plants (as well as for many other species). The moisture, when they are sprayed, gives them enough water to keep them from drying out. If they really need water they will absorb it very quickly, specially if they receive it at the right moment. If they don't need it and when the moisture disappears quickly it will also do no harm. Once they are well established they can endure cold and heat very well. Great care should be taken with collected plants until they are firmly acclimatized. The best soil is one

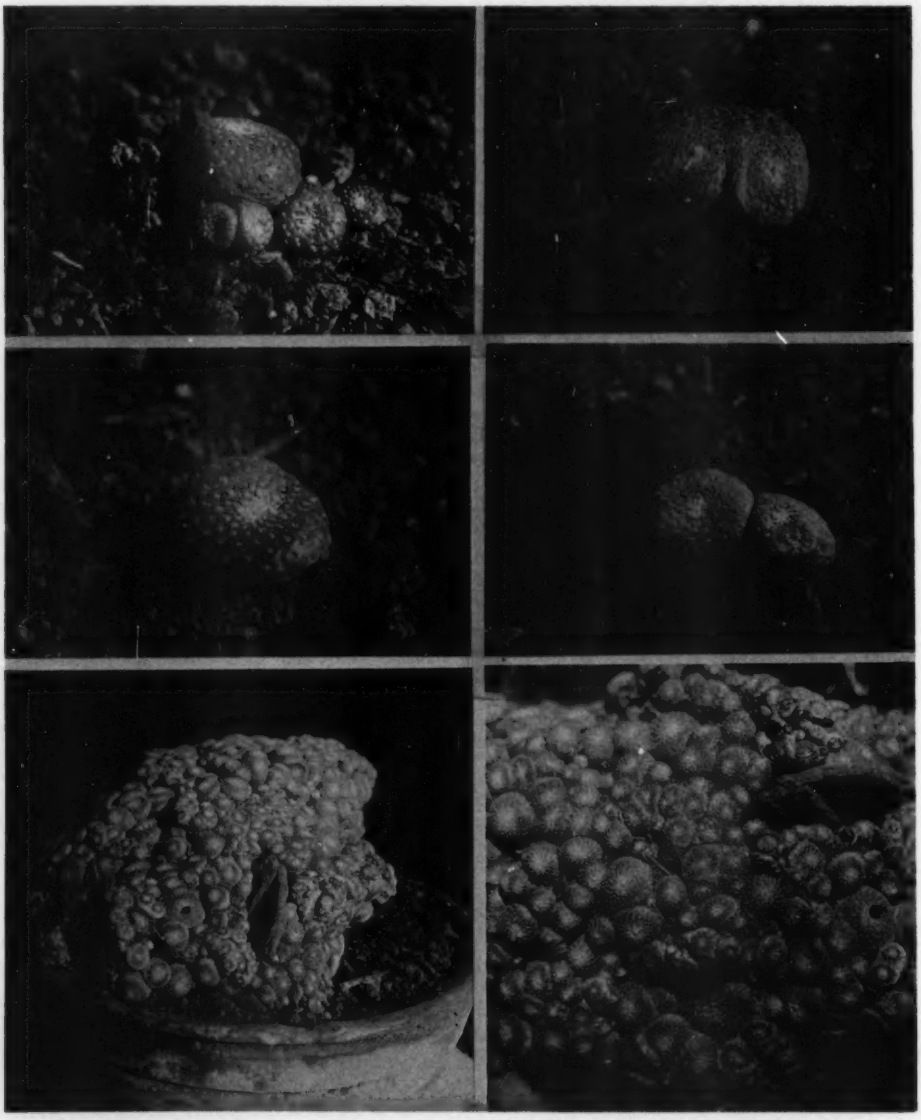


Fig. 61. *Blossfeldia liliputana* Werd. Upper left: Mature head with new heads that formed on roots exposed to light. Size of large head ⅔ of an inch. Upper right: Evolution of a head with two growing centers. Photographed in a partly shrunken condition. The small woolly specks near the growing centers show where future buds will form. About ¾ natural size. Center left: Single mature head with four woolly specks showing areoles where buds will appear. Actual size 1 inch. Center right: Head with two growing centers. I also have one with three growing centers. Actual width is 3/5 of an inch. Lower left: Part of a colony of 200 heads. At the lower left side one head shows a seed pod. Photo is about half natural size. Lower right: Part of a colony of more than 200 heads. About natural size.

that is formed by disintegrating rock—fine sand and powdered stones—with some addition of good top soil. The plants will also grow in many different kinds of soil if they receive the proper care. A place with little ventilation and stagnant air with much dampness and heat is not the right condition for these plants.

At the time when the Blossfeldias develop and enlarge their roots they don't seem to grow but they look normal and healthy. During this dormant time just like many other species of cacti they store material for the next growing season,

that is, when their growth takes a visible form with the heads showing new areoles and plumping up.

During the many years that I have been interested in these plants I have made many interesting observations that I have never seen recorded elsewhere. When the body of the plant shows new growth, the roots get thinner; the size of the heads depend somewhat on the amount of water the plant receives at this time. When the new growth of the body of the plant comes to an end, the root starts to enlarge, drawing plant foods from the body of the plant. This process continues with the root drawing the body of the plant closer to the soil surface or even below. The old epidermis gives way to the new and as the root reaches its maximum size the plant body begins to plump up, distending its tissues with new living materials. The plant growth occurs mostly after the flowering season when the hottest days are past.

Do not try to force the plant to grow out of season. It seems to make its best growth in humid, warm, summer weather with occasional spraying. Avoid over watering and placing in direct sun. Do not be alarmed if the plants have cupped centers due to the fact that the side walls do not contract. Seedlings look like small Lithops but with tuberous roots. Young plants with single heads are easier to establish than old, collected plants in clusters.

Blossfeldias can reach a size of 2½ centimeter (1 inch) in diameter and the length of the roots can reach 10 centimeters and about ½ centimeter in diameter (⅕ inch). The suggestions I offer are specially for new plants and they are based on my experiences and observations. On fine sunny days the flowers of this species open wide. The color of the flower is pale yellow. An open flower has a diameter of ⅕ of an inch, ½ centimeter. Cacti adapt to greatly varying conditions if they are not permanent. They need changes in temperature and humidity and there are extremes that must be avoided. What must be avoided with most cacti is to expose them to cold and moist conditions for many days, specially if they have just been growing lustily in a warm and damp atmosphere. Before being exposed to cold conditions they should be dehydrated, the more they are dehydrated the less they will suffer when exposed to cold conditions.

	Temperature	Humidity of the air	
(a)	35°C 30°C 25°C	40-60% 50-70% 70-90%	Under these conditions the plants dehydrate concentrating their substances in their fleshy roots, there is very little visible activity.
(b)	20°C there can be 5 degrees more or less (alternating)	70-100%	Optimum conditions to induce visible growth, the plant plumps up quickly, new heads appear and also the little woolly spots, where in late winter the buds appear, opening in early spring or late winter.
(c)	15°C 10°C also several degrees below 0°C	70-50% 60-40% generally with some humidity but generally very dry.	Very little visible activity. After coldest period is over the plant's substance goes up from the fleshy roots to the heads, very slowly. Then generally follows the driest time in nature and after a warm period followed by the rainy season.

SPOTLIGHT ON ROUND ROBINS

There are four new members to add to our robin circle and they are most welcome. They are: Mrs. Jean Bradford, Mountain View, California; Mr. Walter E. Goddard, Culver City, California; Mrs. Laura Clowes, Denver, Colorado; Mr. Bob Jones, Oakland, California.

Robins still need members, so perhaps one or more of the following robins may appeal to some of you, but if those mentioned do not happen to be of particular interest write to me anyway if you want to join a robin, as often places become available in other robins after this is written. Please mention if you are a member of the Cactus and Succulent Society of America.

May I urge those of you who take pleasure in growing epiphytic plants and have as yet not thought to join the Epiphyte Robin, to do so while space is available in it. All succulent rain forest plants are included except epiphyllums. The robin is now in flight and it needs three or four more members. Whether you have rain forest conditions and are able to grow such plants outside, or just grow them for your pleasure in pots indoors, you are eligible and most welcome to join.

The Stapeliad Robin is also seeking three or four additional members to bring its membership to seven or eight. It is already in flight and is a most enthusiastic group. I hope there will soon be others joining this robin.

The Seed Propagation Robin No. 2 has several members on its waiting list and more are needed before the first flight can go out. It needs five members at least. It should be a worthwhile robin for those who wish to grow cacti and succulents from seed.

The Mesemb. Robin needs more members. It can not be sent out until there are, perhaps, four or five members, and so, if these plants are your joy, won't you consider joining it.

There is space for a member or two in the following robins: Mammillaria Robin No. 2; Arranger's Robin; Epiphyllum Robin; Euphorbia Robins Nos. 1 and 2; and a number of the Cactus and Succulent Robins, which like the Window Sill Robins, are for those who have a general collection of plants, be they few or many, kept on the window sill or in a greenhouse.

I am sorry to report that a number of our robins

are among the missing. I have not been able to find the Desert Dish Garden Robin and it must be presumed not functioning. The C. & S. Robin No. 2 has been discontinued. Others, which have ceased to fly but perhaps may be found later and returned to making their rounds, are five in number, leaving twenty-seven active robins at the present time.

Now for the Robins, beginning with the first flight of the Epiphyte Robin. Lois Covey has built her Florida garden in the last ten years and says, "It's been a challenge to adapt one's gardening to the extremes of the Florida climate, but exciting to learn all the unusual plants that can be grown here. I have a lath house for tropical foliage plants, bromeliads etc., which can take the heavy rains but need protection from the hot summer sun and some cold days in the winter. I built a smaller lath house for my succulents and plan to cover it with plastic for the summer months to keep off heavy rains which rot them badly." Another member from New York, Monte Streitfield, says, "My Rhipsalis are my pride and joy. From October to May there is a continuous display of flowers. I grow mine in individual pots rather than all together in a hanging basket. Despite cultural information from reliable sources that insist on growing rhipsalis never below 60°F. in winter I have found from experience, when my old heater failed that even 28°F. won't hurt them if they are on the dry side. With my new heater, I keep the winter night temperature at 45°F. during the last few months and rather dry at the roots. I remove all shading from the glass in November and start to shade again in March. Also in March when many plants are throwing out leaders I spray with cotton seed meal solution and water more frequently. At this time (March) R. trigona, R. pachyptera, R. capilliformis, R. teres, Hatiora salicornioides and bambusoides, R. mesembryanthemoides are in bloom. The Rhipsalidopsis and Schlumbergeras are in bud."

From the Seed Propagation Robin No. 1, known as the "Wildcat" Robin, one of its members is Clark Champie from Texas, who writes, "With very simple methods I have been growing seeds by the thousands for the past several years. With humidity as low as 7% at times and seldom over 30% during the day, I have a minimum of trouble with diseases associated with too damp an environment. By using chemicals and controlling the humidity with sheet plastic I am able to keep diseases just about under control. And I get excellent germination in the process. My soil mix is my own and consists of about half sand, one fourth desert soil and one fourth decayed granite. I usually add a little liquid fertilizer several times during the year and my seedlings thrive. At present I have over 150,000 seedlings sprouted since August first."

Anne Jones, a California member of the Echeveria Robin, writes, "E. hasfordii is a deep cup about 7" across, leaves rippled around the edge, greyish blue-green with pink edges. Rosettes about as high as it is across and very symetrical. Flowers are about ten inches above the rosette, the usual yellow and rosy red. It does not multiply easily. My aim is to select good rosettes of my plants, pot them and keep all the offsets off and try to grow the finest single rosettes that I can."

In the Window Sill Robin No. 2, Eva Opheim in Illinois tells of a cactus she rescued after having been discarded. She says, "I cared for it for about five years, and it had grown to four or five inches in diameter, when one summer four buds appeared and one night began to unfold. I took it inside and placed it in an open screened doorway in the moonlight. Early in the morning I was awakened by the most lovely scent and knowing it was the cactus I arose at once to see it. The four five-inch, pale pink flowers were just ethereally beautiful. As it was the first cactus flower I had seen, it impressed me so much I began to collect them. The aforementioned plant is now nine inches tall, nine inches in circumference and has bloomed at least twice a season since. I have identified it as Echinopsis multiplex."

Bea Hanson, who lives in New Zealand and belongs to the Rare Cacti and Crests Robin, has written this in her letter: "I do have a Euphorbia grandicornis which I grew from seed and which gives me great joy. It is a perfect plant and won me a prize at the last show." She also says, "I have two Melocactus which I got as seedlings and they are now about eight years old but no sign of a "topknot" yet. They sure are slow growers. I saw one grafted and it wasn't as big as a tennis ball and it had a perfect little cephalium. The plant was dark green and looked very healthy." To Leslie Tookey in England who mentioned he "had just managed to get a small graft of Mamillopsis senilis cristate" she said. "Wow! Fancy being able to get a Mamillopsis senilis crest. I bet you will treasure that one!"

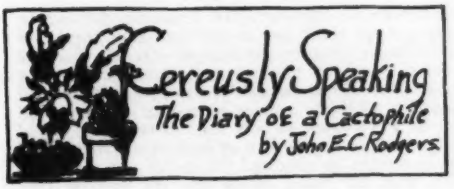
Dipping into the Small Cacti and Mimicry Succulents Robin Bruce Cutler, also from New Zealand, has some tips to give. He says, "You can often save the plants which die after flowering simply by taking the flower off as soon as it appears." To start cuttings he wrote this, "I find the best way to start cuttings and leaves is in a box of fine pumice sand underneath the glasshouse bench. Whenever I remember I dip the end in a rooting hormone." Again he says, "Some seeds will germinate better if held over and they may show up the next year" (of Euphorbia bupleurifolia seed particularly).

Roy Strange, of the same robin, writes from England telling of his favorite plants among which are, "Mams schiediana and candida with pink buds, Lobivia wrightiana (pink flowers), Urbinia purpusii (an attractive plant), Aloe variegata (an old favorite), Crassulas in variety including monticola (very attractive with a mass of white flowers, pink in the center), various Sedums including trealeasii and bellum, Stomatium geoffreyi (this small mesemb never seems to stop blooming, it's small deep yellow, highly scented and flowers fairly often. Seems to be night flowering."

Taken from C. & S. Robin No. 7 and the letter of Florence Myers, we can all know how she feels when she said, "We are very happy about our plants this year. The Epi's are just loaded with buds—the most we ever had- -we must have done everything right for a change." She lives in Colorado.

To end this report, let's go dreaming with Roger Jensen of Minnesota, who anticipates the plants he wants to add to his collection when he writes, "six or seven new Stapelias—I will have close to twenty of them; five or more new Euphorbias and a number of varied desert and epiphytic cacti, with all the seeds I will plant and have sprouted already and the new plants I will get this spring I will have 600 or 700 plants by next fall. Holy Cow! I wonder what my plants will look like about five years from now. I will have some mighty fine and beautiful specimens by then. Big blue cerei ten and twelve feet tall, jungle cacti climbing all over the greenhouse roof, old men cacti two and three feet tall, big clustered Haageocereii, Cleistocacti, Monvilleas four or five feet tall, Echinopsis a foot or more across and two feet tall and Epiphyllums with twenty or thirty huge flowers every spring."

Is anyone interested in joining a robin? Please do write if you are. Don't put off that inquiry for a robin today which you might like to be in tomorrow. (Mrs.) Gladys H. Panis, P. O. Box 705, Falmouth, Massachusetts.



About this time of year the succulents are at the height of their beauty. The flowering season is at least three-quarters done and I begin to think of the Autumn and storage problems. The questions I'm asked most frequently are: 1. Where do you put all your plants? 2. Do you have a specific place for each and every one? 3. Are dormant plants better stored in a well lighted, cool, dry place or a warm, moist, well lighted to poorly lighted place? 4. Do you store plants that need like treatment in the same part of your greenhouse? 5. Do you store your Epiphyllums and Orchid Cacti in a well lighted place with free circulation of air, etc.? 6. Do Echinopsis, Lobivias, Rebutias, Echinocerei, Mammillarias and other small blooming size plants respond to the same treatment? 7. Is it necessary to store Opuntias, Pereskias, Pereskiopsis, and Consoleas in the best place you have for light, air, coolness or warmth? 8. Does good storage practices pay off in blooms, plant growth and saving plants? 9. If plants are stored cool, dry and out of light, can you just forget them? 10. How do you determine which plants can stand storage, light, coolness, dryness and still keep them dormant?

These ten questions are the gist of the letters that I'm attempting to answer. I'm afraid the September-October Journal would be too late for my answers so I will answer them in order.

Where do I put all my plants? Well, to be frank with you, it frequently puzzles me, too. It may seem that I am answering all ten questions with the first one, but wait. After studying the plants, I've found that once you have found the right storage place always put the plant back in its niche, year after year. I first place the finicky plants in their places, next the experimentals for the testing program, then I fill in the benches, shelves and on the ground. The plants that survived last year and previous years experimental placement will be returned to storage room, under benches, suspended from poles. in metal trays, in unglazed windows, between storage room and greenhouse and so on until the collection that was "out" is "in".

Do you have a specific place for each and every one? My Christmas Cactus, Zygocactus, Orchid Cacti, and Epiphytes such as Epiphyllum species, Discocactus, Rhipsalis, etc. get the same places near the roof glass, suspended from wire hangers (made of coat hangers) and in windows near the roof glass. The Lobivias, Rebutias, Echinopsis, Astrophytums, Selenicereus, Monvilleas, etc., are above the 3-feet bench level. Some are on the shelves 4-feet, others 5-feet, and some on shelves 6-feet up on the sides, rear wall, etc. With the 45 to 55 degrees night temperature, good light during the day and extended dryness for most of them, I get good results, plenty of flowers and later growth. It has taken many years of experimenting to make all cacti and succulents grow and flower.

Are dormant plants better stored in a cool, dry, well lighted place or a warm, moist place? If a plant is dormant (stops growing) it is hard to decide which is best. I have used the out of print Houghtons's *Cactus Book* in which the chapter Conspectus of Species gives a clew to their hardiness and care.

Do you store plants that need like treatment in the same part of your greenhouse? Yes it saves time and has advantages. There are exceptions in genera groupings and some are very unhappy with too much light, too much shade, too much coolness and too much warmth. There seems to be no definite answer.

Number 5. About 12 years ago I found that my Epiphyllums did best when there is a free circulation of air as well as good winter sunlight and warmth without too much drying out. I use the same general cultural methods whether winter or summer. I use pages 171-216 of the *Epiphyllum Handbook* and although Epiphyllums will stand blunders, I find it best to follow what is written about them.

Number 6. I find that Echinopsis, Rebutias, Lobivias, Cereus, Mammillarias and other small flowering size plants respond to the same treatment and can take coolness, dryness and as much light as you can give them. I set the pots in containers of coarse sand when I resume spring watering as this retains the moisture and keeps the roots moist. When Carl Henscheid of Rupert, Idaho, showed us slides of his cactus flowers we were astonished to learn that he does not have a greenhouse but stores his plants in winter in a frost-free cellar where the temperature was really cold. I began to do the same. It works and I've had flowers on some plants for the first time in 5 to 10 years. The secret is dryness, coolness and plenty of light.

Number 7. Opuntias can take a dark storage place until moved into spring and summer positions. I have 40 or more species and keep the most spectacular types on the bench or suspended. The Pereskias, Consoleas, etc. I store the same as Opuntias but get them out into the light as early as I can because they are not as thick stemmed as the Opuntias and dry out faster. My storage space is under the shelves in the storage room, which is cool, dry, and very dimly lighted.

Number 8. Do good storage practices pay off in flowers? After a pattern of treatment has been evolved and it is successful, it should be followed year after year. It is important to keep written notes because it is impossible to remember all the details. I have my storage room lined with aluminum foil which reflects both heat and cold as well as light. Metal trays of galvanized iron are fine to store plants in as a layer of sand can be placed in the tray to absorb and distribute moisture. I always clean and spray all shelves, trays, etc. before I place plants for another storage season.

Number 9. If plants are properly stored, can they be forgotten? It depends on the year. If the storage season has been overly warm even though the plants are cool and dry, they frequently begin early growth and there will be spindly growth and some losses especially along Lake Erie where we have cool, dark springs. My storage problems are 80-85 percent successful. You have to experiment with some special species and soon you will get the "feel" of the plant's needs. Because of my constant experimenting and carefully kept notes, I know the needs of my plants in winter, spring, summer, and fall.

How do you arrive at the plants that can stand storage, light, coolness and dryness and still have them stay dormant? My thesis for storage of dormant, near dormant, non-dormant, and just tender plants in cool climates is to read books, study atlases, visit greenhouses and botanical gardens and successful growers. Wherever you go, you will get new in-

formation and ideas which you can adapt to your needs. I've seen dry-plants growing wet and wet-growing plants growing dry and so on. It takes insight to manage a collection of cacti and other succulents.

If you want other information that I can give you, just let me know. John E. C. Rodgers, 1229 W. 8th St., Lorain, Ohio.

THE NEW YORK CACTUS AND SUCCULENT SOCIETY

How to go about building a desert garden in the city of New York during the height of a blizzard—that was the problem that faced the New York Cactus and Succulent Society this past March when the worst snow storm in 12 years hit the metropolitan area on the very day we were scheduled to bring our exhibit into the Coliseum for New York's famous International Flower Show. Planning for the 1960 show began immediately after the conclusion of the 1959 show when we entered into negotiations with the show management to exhibit the first Desert Garden in recent years in the New York show.

Since large show specimens are not easy to come by here in the East letters were sent to the leading western growers to find out what was available. It is pleasant to report that we received the utmost cooperation from these growers who not only shipped us fine specimens from their own stock but some went out of their way to locate extra fine plants for us from other sources. Plants began to arrive by late summer and continued through the fall and winter and right up to the day before the show opened. Dr. Barad was in charge of purchasing and storing the plants in his New Jersey home located some 50 miles southeast of New York, while Walter Mansell was entrusted with the job of supplying the bedding material and also with the transportation of all plants and material and he lives some 50 miles upstate from the city. At 8 o'clock the morning of that fateful day he left his home with a truckload of peat moss and lumber just as the first few flakes of snow began to fall. He managed to get into the Coliseum and unload by 2 that afternoon and then headed south for the Barad home. This part of the trip normally takes no more than an hour and a half but some seven hours later Walt still had not been heard from and was presumed to be buried in a snow drift. It was at this moment that this writer saw the show opening with no Desert Garden and after doing a quick mental tally on our expenses to date envisioned a bankrupt society. Luckily for us, Walt is not a man to give up easily, and after battling howling winds, icy roads and blinding snow all day, he waited until he was just a few hundred feet from the Barad home to skid into the snow bank! That night he slept the sleep of the weary and in the morning the loading operation began. Due to the extreme cold, all the cacti had to be wrapped and carried out to the road since the high snow made it impossible to get the truck in close to the greenhouse. Assisted by the Barad youngsters the two men finished this task at 5 in the evening and then began the trip into New York with Walter Mansell driving a truck loaded down with choicest specimens of desert plants that have ever been seen in New York, while Dr. Barad carried the overflow in his station wagon. By this time the storm had abated somewhat and the trip was made in 5 hours including a stop at Newark Airport to pick up 3 handsome specimens of Cephalocereus senilis that had just arrived from Mexico.

Upon arriving at the Coliseum at 10 P.M. they found the rest of the show committee in the last stages of nervous exhaustion—after all, that garden had to be set up and ready for judging by 9 the next morning. But the sight of all those magnificent cacti spurred them on to herculean efforts and they set to work with a vengeance. The committee labored on through the night and as the first gray streaks of dawn broke over the snowbound city the finishing touches were put in place and we stepped back to admire our Desert Garden. It was everything we had hoped it would be and we knew then that the Gold Medal was as good as ours. And so home and to bed for an hour's sleep and then back to the show to be ready for the judging and the opening of the show. We won our Gold Medal and the $800.00 cash award that went with it and we won the approval of the many thousands of people who stopped to admire the garden.

What they saw was a desert scene 20 feet long by 10 feet deep containing over a 10 outstanding specimens of cacti and other succulents. The larger plants, many of them 4 and 5 feet tall made up the background—a splendid Cleistocactus hyalacanthus with dozens of fiery blossoms and as many buds which kept opening throughout the 8 days of the show, a Cephalocereus palmeri covered with tufts of snowy white hair, a grouping of massive Cephalocereus senilis and many others of the taller growing cacti. In front of these came the barrels—a truly beautiful Echinocactus grusonii, radiant in its golden armor, with not a scar or missing spine to mar its perfection. Two smaller specimens on each side served to accentuate its size. Next to these was placed a grouping of Ferocactus pilosus, their flaming red spines combining with the golden barrels to provide a focal point of gorgeous color. Next came the smaller plants, the Mammillarias, Echinocereus, Astrophytum, Lobivias and Notocactus—among the latter was Arthur Garrabrant's Notocactus haselbergii which attracted so much attention at last year's show. It seemed to have doubled in size since last year and very obligingly remained in bloom night and day for the run of the show. It was such a popular plant we had to keep close watch on it! At the left of the garden were the Opuntias—rufida, santa-rita, engelmanii and gosseliniana, and at the right of the garden were the Aloes and Agaves. Other genera scattered throughout the garden added interest to the scene. At the back and sides the garden was enclosed by an aged and worm-eaten split rail fence which seemed just the right touch to suggest the timeless quality of the desert. To add to this effect Dr. Barad placed a handful of bones on the sand and seeing a questioning look on some of our faces hastened to assure us that these bones were not from the remains of any of his patients. There is a story about the fence that bears telling—once we had decided upon the sort of fence we wanted, Dr. Barad scoured the countryside and came upon a pile of old rails and posts on a neighboring farm and asked the farmer if he could take some. He was told to help himself and when the farmer saw Dr. Barad selecting only the most weatherbeaten and worm-eaten stock he obviously thought the Doc was a little weak in the head and he very disgustedly said, "what do you want with that old junk—why don't you take some of this newer stuff over here?"

We will be exhibiting another Desert Garden in the 1961 show so that visitors to it will again be able to see truly representative specimens of those most unique and most American of plants—cacti—as well as succulent plants from new and old world deserts.

JOSEPH EMMA

SACRAMENTO CLUB

After four meetings the Sacramento Cactus and Succulent Society has 125 members with good attendance and a great deal of interest. We are a study group with old and new growers.

Frances Bogle
Box 27
Clarksburg, Cal.

SLIDE LENDING LIBRARY

The Slide Lending Library was created several years ago for the exclusive use of those Cactus and/or Succulent Societies that are affiliated with the Cactus and Succulent Society of America, Inc.

At a recent Executive Board meeting, the rules governing the use of these slides were revised. The new rules are:

1. Any Cactus and Succulent Society that is affiliated with the Cactus and Succulent Society of America, Inc., may borrow them.
2. Request at least two weeks ahead of time the set you desire and give the date of showing. Please state if you can use an alternate set and which one in case the set you desire is in use.
3. The set loaned to you must be returned within one week after your date of showing. Please return by parcel post insuring them for $5.00.
4. A deposit of $5.00 must accompany your request.
5. A charge of $1.00 will be made to cover the cost of handling.
6. When the slides are returned to the Slide Lending Library, your deposit (less the $1.00 handling charge) will be returned to you.

Rule 5 is new and effective this date. The few cents left over after postage and insurance have been taken out will go into an operating fund for the Slide Lending Library. It is hoped that we can finance new slides and increase the number of sets by this method.

The following sets are available:

No. 1. California Cacti and other Succulents.

No. 2. Baja California, Mexican and South American Cacti.

No. 3. Orchid Cacti, Miscellaneous Cacti and Succulents.

No. 4. Orchid Cacti.

No. 5. Arizona Cacti and National Parks.

A set of "Aloes of South Africa" is in preparation and will be announced shortly when available.

Please mail your requests for slide sets to

George G. Glade
7600 Verduga Crestline Dr.
Tujunga, California

MAMMILLARIA SOCIETY

In view of the increasing interest taken in the genus Mammillaria, and the increasing number of species becoming available, I am proposing the formation of a special Society, membership of which is open to anyone keenly interested in this genus. The objects of this Society are to increase the knowledge of the Mammillarias by exchange of information and experiences. It is hoped to produce a newsletter and eventually a new illustrated reference work on the genus Mammillaria, probably in instalments. It would also be an object of the Society to assemble as complete a collection as possible of correctly named specimens of each species and variety known. These objects will, doubtless, take some years to fulfill, but I feel them to be well worth while and, in fact, really needed. I should like to hear from anyone interested in the formation of this Society and, if there is sufficient response, a first meeting will be arranged—probably in the London area.

If you are interested, please contact

D. E. WATLING, B.Sc., 45 MONTAGUE ROAD
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—*Then he orders a book.* "Dear Sir: Send a copy of Cacti for the Amateur. Please hurry. I have a very expensive bunch of cacti dying."

CORESPONDENTS WANTED

From Oamaru, NZ. Mrs. E. Pye, 9 Usk St. and Mrs. W. E. Nisbet, 29 Usk St.

DO YOU KNOW?

That in the October, 1959 issue of Sunset Magazine there were two pages of recipes for the use of the Prickly Pear under the title of "Cooking Discovery". Salads, jelly, punch, milk-shakes, and salad dressings were just a few uses for the lowly cactus fruit?

That in the Bulletin of the Botanical Society, University of Saugar, Saugor, India, there was an article "Polyembryony in Mammillaria tenuis DC." by Y. D. Tiagi?

That "Succulentarium Japonia" March-April 1960 featured an article on Jungle Cacti with 34 pictures of Rhipsalis? Fortunately this Japanese magazine used English for the captions.

That there is a town in Arizona by the name of Cactus? Also there is a Cactus in Wyoming?

That Sacramento, California has one of the largest cactus clubs with over 100 members?

That there is a society called The Egyptian Society of Cactus Amateurs founded in 1941?

That there is an Argentine Cactus and Succulent Society and one of their projects is to build a cactus collection for their Botanical Garden?

That there is a new 3-peso stamp for Argentina showing the 3000 meter high Cuesta de Zapata. On the slopes are Trichocereus pasacana or terscheckii.?

That there is a Desert Cactus Club in Hesperia, California?

ERIC WALTHER

The Journal of the California Horticultural Society, July-Sept. 1959, contained "Echeveria Hybrids" which was an unpublished article written by Eric Walther. It contained a list of superior, locally-available, hybrid echeverias. Another article gave his history, 1892-1959.

The Horticultural Magazine for April 1960 also published a manuscript submitted just before Mr. Walther's death. This was a popular article using many photographs, some of which appeared in our Cactus Journal 15 years ago. A list of 65 species and hybrids were recommended as good, better, or best.

Both of the above articles were evidently written to create interest in his proposed monograph which may be published soon since its publication was provided for in his will.

I REMEMBER

—when The Cactus and Succulent Society of America held regular meetings and filled the lecture room of the Los Angeles Library. I remember the cactus shows at Rust's Nursery in Pasadena where we had an opportunity to meet the members and see their best plants. What happened to that enthusiasm we used to see in Clum, Poindexter, Brassfield? Maybe I'm just an old timer.

We used to have American botanists who named new species but now it seems to be left to Europeans or our friends in Mexico. Here are a few examples culled from various magazines. *Espostoa ritteri* Buin. spec. nova. in Succulenta. *Lithops koelemanii* Boer spec. nov. in Succulenta. *Conophytum subincanum* Tisch. spec. nov. in Journal of Great Britain. *Gymnocalycium eytianum* Cardenas nov. spec. in Kakteen Und Andere Sukkulenten. *Echinofossulocactus multiareolatus* Bravo sp. nov. in Anales Del Instituto de Biologia. And in Candollea 17, P. R. O. Balley described 22 new species and varieties of *Monadenium*. Aren't there any more authorities in our own country? Perhaps I'm an old timer looking backwards, or have we lost the cactus race along with the arms race?

G. A. FRICK

CHICAGO CACTUS SOCIETY

The following officers were elected: Mrs. Lilian Wilkinson, President; Charles Anderson, Vice-President; Margaret Radden, Secretary; Orlin I. Wahl, Treasurer.

10226 S. Bell Ave. Chicago 43, Ill.

Fig. 62. Marjorie Shields in speaking of Opuntias reminds us of an exhibit of Carl Brassfield's in 1936 when he exhibited 200 Opuntias at the Eighth Annual Cactus Show of the Cactus and Succulent Society of America.

PRESIDENT'S REPORT

As the first six months of 1960 draw to a close, I would like to report on the activities of the Executive Board of the Cactus and Succulent Society of America, Inc. So far the Board has held two meetings, one in January and another in March, with still another coming up soon in July. The main order of business has been bringing the By-Laws up to date, several changes have been made, clarifying several sections, so they will be more readable and understandable. This is the first time this has been done since the By-Laws were printed in the November, 1947 issue of the Cactus and Succulent Journal, with subsequent changes in the By-Laws appearing in later issues of the Journal for the members information.

The proposed Convention in Mexico City, July, 1961, has also taken up some time and I believe you will soon hear from the Convention Chairman, Pat Moorton, on this. Prospects for a very fine time are evident so you had better start getting your "Shots" now, so you will be ready.

Another important business matter before the Board has been the matter of finances. Most members are not aware that the Society has practically no income for its normal operation. Members pay $4.00 for their subscription to the Cactus and Succulent Journal and receive membership in the Cactus and Succulent Society of America, Inc., as a bonus. This subscription fee goes to the Editor for publication of the Journal, so no money there. The Affiliate Societies pay $5.00 or $10.00 (according to membership) to the Affiliate Secretary, but this money is used for the Convention and the operation of certain services to the Affiliates, so no money there. Members pay a fee for the use of the Library and the Color slide sets, but this is used to keep these departments up to date, so no money there. Back in the days when the Research Committee used to handle rare plant sales, some money came in, but this was long ago, so no money there.

Where does the money come from for the operating expenses of the Society? Well we have eight associate members at $1.00 each so far this year, but we have spent $6.77 for the first three months, so as always, various members of the Board and "Friends" of the Society dig down and come up with enough to keep the Society going. A recent example: Board members contributed enough so that the new three volumn set of "Jacobsons Succulents" could be added to the Library.

I believe this Society should be, and can be, self supporting if those members who are interested will help. Get members of your family to send in $1.00 for an Associate Membership, they have all the rights and privileges of an active member except receiving the "Journal". You yourself, as an active member, could help a great deal by becoming a Sustaining Member by the contribution of $1.00 or more, (under a recent change in the By-Laws) all sustaining members names appear in the next issue of the Cactus and Succulent Journal, following their contribution. Remember, send in all additional fees, Associate or Sustaining, to the Secretary of the Cactus and Succulent Society of America, Inc., Mr. William Bently, 10608 Poinciana, Whittier, California.

EDWARD S. TAYLOR, President

FOR SALE

Desert Magazine (Not Desert Plant Life) vols 1-13 inc. in binders, good condition for $50. E. C. Smith, 457 Pioneer Dr., Glendale, Calif.

WANTED

Sclerocactus polyancistra. Bert Mueller, 406 Redding Rd., Campbell, Cal.

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TOPEKA DESERT GARDEN

(Cactus, Succulents, and other Xerophytes)

I have been empowered by the Park Commissioner of Topeka, to establish a public garden for cactus, succulents, and xerophytes for the city. Lately we have become interested in any and all cactus, succulents, and xerophytes whether they can take our climate without any protection except well drained ground or not. Since this will be a public garden, free to all we will be glad to receive any gift plants either tender or hardy. We have a green house at our disposal. I can use large amounts of hardy plants. I need only one or two starts of each tender species. Funds are available for the purchase of plants, but I must first approve any cost you may cause me. Give the botanical name and habitat of your plants, if possible. Extra plants will be traded. We will put the name and address of the sender on the plant label. This is a standing request. Advice or suggestions welcomed.

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